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A REVISION OF THE GENUS ACRONYCHIA (RUTACEAE)*

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26. **Acronychia foveata** Hartley, sp. nov.

Arbor parva usque 10 m. alta; ramulis novellis glabratis; foliis unifoliolatis; petiolo glabro vel glabrato, 1–2.5 cm. longo; foliolo chartaceo vel subcoriaceo, glabro, obovato vel elliptico vel elliptico-oblongo, 7–13 cm. longo, 3–6 cm. lato, basi rotundato vel obtuso vel cuneato, venis primariis utrinsecus costa 7–10, apice obtuso vel obtuse acuminato, acumine usque 0.5 cm. longo; inflorescentiis unifloris, ca. 1.5 cm. longis, axi glabratis; floribus 8.5–9 mm. longis, pedicellis glabratis, 1.5–2.5 mm. longis; sepalis puberulis, late rotundatis, 1 mm. longis, 2 mm. latis; petalis abaxialiter puberulis, adaxialiter glabris; disco glabro, 0.4 mm. alto, 1.2 mm. lato; ovario apice dense pubescenti, aliter glabro, sine fissuris septicidalibus; stylo basin versus dense pubescenti, aliter glabro; fructibus luteolis, in sicco rubiginosis, manifeste foveatis, apice sparse pubescentibus, aliter glabris, sine fissuris septicidalibus, late ovoideis, ca. 12 mm. latis, basi disco persistenti annulari 1.5 mm. alto, 6 mm. lato, apice obtusis vel acutis; epicarpio in sicco 2–3 mm. crasso, mesocarpio spongioso-crustaceo vel sublignoso; endocarpio subcartilagineo; seminibus nigricantibus, ca. 5 mm. longis. HOLOTYPUS: *Vandenberg, Katik & Kairo NGF 39820* (LAE). FIGURE 13.

DISTRIBUTION. Territory of New Guinea (Morobe District) and Papua (Southern Highlands District); montane rain forests from 1950 to 2400 meters.

Territory of New Guinea. MOROBE DISTRICT: Bulldog Track, Edie Creek, *Sayers NGF 21201* (CANB). **Papua.** SOUTHERN HIGHLANDS DISTRICT: 7 miles from Kagaba Camp toward Mendi, Lat. 6° 5′ S., Long. 143° 50′ E., *Vandenberg, Katik & Kairo NGF 39820* (LAE, holotype; L, isotype); Ialibu, *Womersley & Woolliams NGF 37080* (L, LAE), *NGF 37090* (LAE).

The outstanding characteristics of *Acronychia foveata* are the heavily pitted fruit and persistent, annular disc.

Acronychia aberrans and *A. vestita*, both endemics of north Queensland,

* Continued from volume 55, page 523.

have rather similar fruits to *A. smithii* and *A. foveata* and possibly are relicts of the ancestral stock from which the latter species evolved.

27. **Acronychia cartilaginea** Hartley, sp. nov.

Arbor 10 m. alta; ramulis novellis tomentosis; foliis unifoliolatis; petiolo tomentoso, 2.5–4.5 cm. longo; foliolo subcoriaceo, subtus dense pubescenti, supra praeter costa pubescenti glabro, elliptico, 12–20 cm. longo, 5–8 cm. lato, basi obtuso, venis primariis utrinsecus costa 15, subtus prominentibus, supra parum impressis, apice breviter acuminato, acumine usque ca. 0.8 cm. longo; inflorescentiis paucifloris, ca. 5.5 cm. longis, axi et ramulis tomentosis; floribus ca. 9 mm. longis, pedicellis dense pubescentibus, 5–10 mm. longis; sepalis dense pubescentibus, rotundatis, 2 mm. longis, 2 mm. latis; petalis apicem versus abaxialiter pubescentibus, adaxialiter sparse pubescentibus; disco glabro, 0.3 mm. alto, 1.5 mm. lato; ovario dense pubescenti, fissuris septicidalibus apicalibus; stylo basi pubescenti, aliter glabro; fructibus in sicco brunneis, sparse pubescentibus, fissuris septicidalibus apicalibus, ambitu late ellipticis, 4-angulatis, ca. 12 mm. latis, basi truncatis, apice rotundatis breviter apiculatis; epicarpio in sicco 0.5 mm. crasso, mesocarpio spongioso; endocarpio crasse cartilagineo; seminibus atro-rubiginosis, ca. 4.5 mm. longis. HOLOTYPUS: *Frodin NGF 28411* (LAE). FIGURE 14.

DISTRIBUTION. Known only from the type collection.

Papua. SOUTHERN HIGHLANDS DISTRICT: 6.5 miles W of Mt. Ne, mixed beech forest, 2010 m., *Frodin NGF 28411* (LAE, holotype; CANB, isotype).

I am at a loss to recognize the nearest relative of *Acronychia cartilaginea*, clearly marked by its pubescent leaves and unusually thick, cartilaginous endocarp. I have placed it here in the sequence because of its general similarity, in the fruit, to *Acronychia vestita*, *A. smithii*, and *A. foveata*. It could just as well, however, be placed next to *Acronychia reticulata*.

28. **Acronychia pubescens** (F. M. Bailey) C. T. White, Proc. Roy. Soc. Queensl. **50**: 68. 1939.

Acronychia melicopoides F. Muell. var. *lasiantha* F. Muell. Frag. Phytogr. Austral. **7**: 145. 1871. TYPE: *C. Moore*, New South Wales, Clarence River.
Melicope pubescens F. M. Bailey, Queensl. Dept. Agr. Bot. Bull. **9**: 9. 1891. LECTOTYPE: *Field Naturalists Club Excursion*, March 1, 1891, Queensland, Moreton District, Yandina.
Melicope pubescens F. M. Bailey var. *superba* Domin, Bibliot. Bot. 22(89): 843. 1927. TYPE: *Domin 5638*, March, 1910, Queensland, Moreton District, Tamborine Mt.

Small to medium tree to about 15 m.; younger branchlets puberulent to tomentose. Leaves trifoliolate (occasional leaves unifoliolate, or, in a few collections, leaves entirely unifoliolate); petiole tomentose to glabrate, 0.8–8.5 cm. long; leaflets chartaceous to subcoriaceous, usually pubescent

FIGURE 14. *Acronychia cartilaginea* Hartley, photograph of type (LAE). FIGURE 15. *Acronychia wabagensis* Hartley, photograph of type (A).

below, at least on the midrib and veins, glabrous to sparsely pubescent above, elliptic-oblong to narrowly or broadly oblanceolate or occasionally elliptic, 5.5–22 cm. long, 1.8–7.7 cm. wide, base cuneate or occasionally attenuate or obtuse, main veins 9–13 on each side of the midrib, apex acuminate (the acumen to 2.3 cm. long) or occasionally obtuse. Inflorescences few- to many-flowered, 3–5.5 cm. long, axes and branches densely pubescent to tomentose. Flowers 6.5–10 mm. long; pedicels tomentose, 1–4.5 mm. long; sepals tomentose, obtusely triangular to suborbicular, 1–2.5 mm. long, 1.5–2.5 mm. wide; petals densely appressed-pubescent to tomentose abaxially, glabrous adaxially, semipersistent in fruit; disc glabrous, 0.3–0.7 mm. high, 1.6–2.5 mm. wide; ovary pubescent throughout or pubescent only in the apical one third to one fourth, with septicidal fissures extending for about one half the length; style densely spreading-pubescent toward the base, otherwise glabrous. Fruits yellow, drying dark reddish brown, pubescent throughout or only toward the apex, with septicidal fissures extending for at least one third the length, occasionally with two longitudinal wings to about 8 mm. wide on each carpel, ellipsoid to subglobose, 12–20 cm. wide, base rounded to truncate, apex rounded to acute; epicarp drying less than 0.7 mm. thick, semifleshy, without evident mesocarp; endocarp cartilaginous. Seeds reddish brown, 4–4.5 mm. long.

ILLUSTRATION. Bailey, F. M., Comprehensive Cat. Queensl. Pl. *t. 59.* 1912 (as *Melicope pubescens*).

DISTRIBUTION. Southeast Queensland and northeast New South Wales; rain forests to 1080 meters. See MAP 5.

Queensland. DARLING DOWNS DISTRICT: The Head, Killarney, *Jones*, February, 1960 (BRI); Spring Creek Plateau, *Goy & Smith 359* (BRI); E of Bald Mt., about 23 miles E of Warwick, *Smith 11456* (BRI, CANB); Mt. Superbus, *Whaite*, August 22, 1949 (NSW 127066). MORETON DISTRICT: Eumundi, *Bailey & Simmonds*, May, 1892 (BRI, K, MEL, NSW, UC), *Kandler*, August, 1931 (BRI), *Simmonds*, June, 1895 (A); Blackall Range, *Field Naturalists Club Excursion*, March 1, 1891 (BRI, MEL), April, 1918 (BRI, NSW); Yandina, *Field Naturalists Club Excursion*, March 1, 1891 (BRI, lectotype; MEL, isotype), *Shirley* (A); Eudlo, *Bailey*, March, 1891 (A); Mt. Glorious, *Clemens*, January, 1945 (BRI, GH, MICH, NY, UC), *Hoogland 5236* (CANB), *White 12071* (A, BRI, US); Tamborine Mt., *Clemens*, March, 1947 (BRI, GH, MICH, UC), *Domin 5638* (PR, holotype of *Melicope pubescens* F. M. Bailey var. *superba* Domin), *Longman & White*, February, 1917 (BRI), *Scortechini 15* (MEL), *Shirley*, December, 1915 (NSW), *Simmonds*, October, 1909 (BRI, US), *White 3338* (A), August 17, 1927 (A); Mudgeeraba, *Ledward*, August, 1937 (BRI); 4 miles S of Canungra, *Williams*, January 24, 1971 (BRI); Lamington National Park, *Johnson*, May 21, 1951 (NSW 127068), *Schodde 3376* (CANB), *Smith 10934* (BRI), *Smith & Webb 3595* (CANB), *Tryon & White*, February, 1920 (A, NSW), *Webb 2105* (CANB), *White 6026* (A, BRI, NY, UC), January, 1912 (BRI); Springbrook, *Clemens 43057* (A, US), *White 6264* (BRI). **New South Wales.** Acacia Creek, near Killarney, Queensland, *Boorman 25* (NSW), *Constable*, May 15, 1947 (NSW 127071), *Dunn 125* (NSW), *Jones 1373* (CANB), *White 12514* (BRI); Richmond River, *Simmonds*, April, 1897 (BRI); Tweed River area, *Betche*, April, 1896 (NSW 127074); Wardrop Valley Road,

Buchanan, August 6, 1966 (NSW 127073); upper Crystal Creek 7 miles NW of Murwillumbah, *Clark, Pickard & Coveny 1590* (NSW); 3 miles S of Murwillumbah, *Buchanan*, April 16, 1966 (NSW 127075); Mt. Lindsay, NE of Kyogle, *Constable*, May 25, 1949 (NSW 10541); near Kyogle, *Jones*, June, 1943 (NSW); Whian Whian State Forest, *Cheel*, September 6, 1926 (NSW 127077), *Johnson & Constable*, June 10, 1957 (A, NSW 42343), *Olsen 301* (NSW), *Webb & Tracey*, 1953–1958 (BRI, CANB); Lismore, *Baeuerlen*, April, 1895 (A, K); Wollongbar, *Baeuerlen*, March, 1893 (NSW 127078); Marshall Falls, near Alstonville, *Tanner*, September, 1911 (NSW 127079 & 127080); Tintenbar, *Baeuerlen*, April, 1896 (NSW 127151), *531* (MEL), *781* (U); Clarence River, *Moore* (MEL, holotype of *Acronychia melicopoides* F. Muell. var. *lasiantha* F. Muell.; K, NSW 127083, isotypes), *Wilcox*, November, 1875 (MEL); NE of Glen Innes District, end of new Grafton Road deviation, *Turner*, February, 1955 (NSW 127081); Poverty Point, New England, *Stuart* (MEL, NSW); Dorrigo & vicinity, *Cleland*, January 23, 1918 (AD), *Fraser*, January 23, 1934 (NSW 127090 & 127091), *Heron*, June, 1910 (NSW 127089), *Maiden*, December, 1893 (NSW 127086), *Tindale*, March 3, 1944 (NSW 127088), *Walker*, June, 1917 (NSW 127087), *White 7555* (BRI), *Williams*, August, 1963 (NSW 127085); Coffs Harbour, *Boorman*, May 26, 1909 (NSW 127084).

Melicope pubescens var. *superba* was previously placed in the synonymy of *Acronychia pubescens* by White, Proc. Roy. Soc. Queensl. **50**: 68. 1939.

Acronychia pubescens does not appear to be very closely related to any of the other species of the genus. In characters of the fruit it is similar to a number of other apparently primitive species, such as *A. suberosa*, *A. baeuerlenii*, and *A. wilcoxiana*, but vegetatively it is quite distinct. A New Guinean species, *A. wabagensis*, has similarly fissured, pubescent fruits and may be the nearest relative.

The lectotype of *Melicope pubescens* is one of two collections (the other being *Field Naturalists Club Excursion*, March 1, 1891, Yandina) cited in the original description.

29. **Acronychia wabagensis** Hartley, sp. nov.

Arbor 12 m. alta; ramulis glabris; foliis trifoliolatis (foliis infrequentibus unifoliolatis); petiolo glabro, 2–4.5 cm. longo; foliolis subcoriaceis, glabris, ellipticis vel oblanceolatis, 7.5–15 cm. longis, 3–6.3 cm. latis, basi cuneatis vel attenuatis, venis primariis utrinsecus costa 9–11, apice obtusis vel obtuse acuminatis, acumine usque 1 cm. longo; inflorescentiis paucifloris, 4 cm. longis, axi et ramulis puberulis; floribus 6.5–7 mm. longis, pedicellis puberulis, ca. 5 mm. longis; sepalis puberulis, rotundatis, 1 mm. longis, 2 mm. latis; petalis abaxialiter subtiliter adpresse pubescentibus, adaxialiter sparse adpresse pubescentibus; disco glabro, 0.5 mm. alto, 2 mm. lato; ovario pubescenti, fissuris septicidalibus fere ad basin extensis; stylo basin versus dense pubescenti, aliter glabro; fructibus albis, in sicco rubiginosis, sparse adpresse pubescentibus, fissuris septicidalibus fere ad basin extensis, ambitu subglobosis, valde 4-lobatis, ca. 7 mm. latis, basi subtruncatis, apice apiculatis, apiculo 0.5–1 mm. longo; epicarpio in sicco ca. 0.5 mm. crasso, mesocarpio spongioso-crustaceo; endocarpio cartila-

gineo; seminibus immaturis. HOLOTYPUS: *Womersley NGF 11247* (A). FIGURE 15.

DISTRIBUTION. Known only from the type collection.

Territory of New Guinea. WESTERN HIGHLANDS DISTRICT: Porget logging area 12 miles N of Wabag, 2100 m., *Womersley NGF 11247* (A, holotype; BISH, L, LAE, MEL, NSW, isotypes).

A rare species, *Acronychia wabagensis* is distinguished by having pubescent ovary and fruit with septicidal fissures extending almost to the base. As is mentioned above, *A. pubescens* may be its nearest relative.

30. **Acronychia intermedia** Hartley, sp. nov.

Arbor magna; ramulis glabris; foliis trifoliolatis; petiolo glabro, 3–5 cm. longo; foliolis subcoriaceis, glabris, elliptico-oblongis vel sublanceolatis, 8–19 cm. longis, 3.5–5.5 cm. latis, basi cuneatis vel attenuatis, venis primariis utrinsecus costa 12–14, apice obtusis; inflorescentiis ca. 15-floris, ca. 5.5 cm. longis, axi et ramulis glabris; floribus 15–17 mm. longis, pedicellis glabris, 2–5 mm. longis; sepalis glabris vel glabratis, late rotundatis, 1.5–2 mm. longis, 2.5–2.7 mm. latis; petalis abaxialiter puberulis, adaxialiter glabris; disco glabro, 0.6 mm. alto, 2.2 mm. lato; ovario apice pubescenti, aliter glabro, fissuris septicidalibus 1/3 vel 1/2 longitudine extensis; stylo basin versus pubescenti, aliter glabro; fructibus (non plane maturi) in sicco rubiginosis, apice pubescentibus, aliter glabris, fissuris septicidalibus ca. 1/3 longitudine extensis, subglobosis, 10 mm. latis, basi truncatis, apice rotundatis; epicarpio in sicco ca. 2 mm. crasso, mesocarpico spongioso-crustaceo; endocarpio cartilagineo; seminibus non visis. HOLOTYPUS: *Brass 22918* (US). FIGURE 16.

DISTRIBUTION. Known only from the type collection.

Papua. MILNE BAY DISTRICT: Mt. Dayman, Maneau Range, tall mossy forest, 2100 m., *Brass 22918* (US, holotype; CANB, isotype).

The epithet *intermedia* refers to the fact that this species is morphologically more or less intermediate between *Acronychia wabagensis* and *A. montana*. It differs from the former in having ovary and fruit pubescent only at the apex. From the latter it differs in having trifoliolate leaves.

31. **Acronychia montana** Hartley, sp. nov.

Arbor parva vel mediocris usque 17 m. alta; ramulis glabris; foliis unifoliolatis; petiolo glabrato, 0.8–3.5 cm. longo; foliolo subcoriaceo, glabro, elliptico vel elliptico-oblongo, 5.5–16 cm. longo, 2.5–8 cm. lato, basi rotundato vel obtuso vel cuneato, venis primariis utrinsecus costa 9–12, apice rotundato vel obtuso vel obtuse acuminato, acumine usque 1 cm. longo; inflorescentiis paucifloris, 2–4 cm. longis, axi et ramulis glabris vel puberulis; floribus 12–16 mm. longis, pedicellis glabris vel puberulis, 3–7 mm. longis; sepalis glabris vel puberulis, late rotundatis, 1.5–2 mm. longis,

FIGURE 16. *Acronychia intermedia* Hartley, photograph of type (US). FIGURE 17. *Acronychia montana* Hartley, photograph of type (CANB).

2–3.5 mm. latis; petalis abaxialiter glabris vel puberulis, adaxialiter glabris; disco glabro, 0.5–1 mm. alto, 1.6–2 mm. lato; ovario omnino glabro vel tantum apice pubescenti, fissuris septicidalibus ca. 1/2 longitudine extensis; stylo basin versus sparse vel dense pubescenti, aliter glabro; fructibus luteolis, in sicco rubiginosis, omnino glabris vel tantum apice pubescentibus, fissuris septicidalibus ca. 1/2 longitudine extensis, ambitu subglobosis, saepe acute 4-angulatis, 8–9 mm. latis, basi truncatis, apice rotundatis vel breviter apiculatis; epicarpio in sicco 1–1.5 mm. crasso, mesocarpio spongioso-crustaceo; endocarpio cartilagineo; seminibus rubiginosis, ca. 4.5 mm. longis. HOLOTYPUS: *Pullen 440* (CANB). FIGURE 17.

DISTRIBUTION. Territory of New Guinea and Papua; montane rain forests and cloud forests, 2100–2850 meters. See MAP 5.

Territory of New Guinea. WESTERN HIGHLANDS DISTRICT: McNicoll-Andabare Plateau SW of Laiagam, *Robbins 3328* (CANB); headwaters of the Lagaip River, *Hoogland & Schodde 7557* (CANB); Sirunki, E of Laiagam and N of Yamara, *Walker ANU 759* (CANB); 4 miles SW of Kompiam, *Flenley ANU 2804* (CANB); Kubor Range above Kuli, *Robbins 1120* (CANB). EASTERN HIGHLANDS DISTRICT: Mt. Wilhelm & vicinity, *Brass 30377* (CANB), *Gillison & Streimann NGF 30680* (CANB); Marafunga & vicinity, about 20 miles NW of Goroka, *Buderus NGF 23903* (CANB), *Collins W991* (LAE), *Grubb & Edwards 34* (LAE), *Hartley 13228* (CANB), *Millar NGF 40660* (CANB), *Tuckwell 1* (LAE); Asaro-Mairifutica Divide ½ mile S of Daulo Camp, *Pullen 440* (CANB, holotype). MOROBE DISTRICT: Wau, *McAdam 238* (BRI, LAE). **Papua.** SOUTHERN HIGHLANDS DISTRICT: Lei Camp on track to Mt. Ambua, *Frodin NGF 28102* (CANB); Kagaba Camp, Mt. Hagen-Mendi Road, Lat. 6° 5′ S., Long. 143° 50′ E., *Vandenberg et al. NGF 40052* (CANB). CENTRAL DISTRICT: below The Gap, *Carr 15026* (A, K, L, NY), *15027* (A, K, L, NY), *15148* (A, L, NY).

A rather common species in the mountains of eastern New Guinea, *Acronychia montana* may be distinguished from its closest relatives, *A. intermedia*, *A. carrii*, and *A. pullei*, by its unifoliolate leaves.

32. **Acronychia carrii** Hartley, sp. nov.

Arbor mediocris vel magna usque 30 m. alta; ramulis glabris; foliis trifoliolatis; petiolo glabro, 2.7–5 cm. longo; foliolis subcoriaceis, glabris, ellipticis vel elliptico-oblongis, 4–11.5 cm. longis, 1.8–5 cm. latis, basi cuneatis vel attenuatis, venis primariis utrinsecus costa 9–13, apice obtusis vel obtuse acuminatis, acumine usque 0.5 cm. longo; inflorescentiis paucifloris, 4.5–6 cm. longis, axi et ramulis glabris; floribus 10 mm. longis, pedicellis glabris, 2–3 mm. longis; sepalis glabris, late rotundatis, 2 mm. longis, 2.5–3 mm. latis; petalis glabris; disco glabro, 0.8 mm. alto, 2 mm. lato; ovario glabro, sine fissuris septicidalibus; stylo basin versus pubescenti, aliter glabro; fructibus luteis, in sicco rubiginosis, glabris, sine fissuris septicidalibus, subglobosis, ca. 10 mm. latis, basi et apice rotundatis; epicarpio in sicco minus quam 0.5 mm. crasso, semicarnoso, mesocarpio non evidenti; endocarpio subcartilagineo; seminibus atro-brunneis vel nigricantibus, ca. 4 mm. longis. HOLOTYPUS: *C. E. Carr 15249* (CANB). FIGURE 18.

FIGURE 18. *Acronychia carrii* Hartley, photograph of type (CANB). FIGURE 19. *Acronychia gurakorensis* Hartley, photograph of type (US).

DISTRIBUTION. Central District, Papua; montane rain forests from 1800 to 1950 meters.

Papua. CENTRAL DISTRICT: Uniri River, *Carr 15249* (CANB, holotype); Alola, *Carr 13681* (CANB), *14179* (L, LAE), *14180* (L).

Acronychia carrii is apparently most closely related to *A. pullei*, differing in having shorter pedicels and smaller leaves. There also may be a fairly close relationship to *A. trifoliolata* var. *microcarpa* (q.v.).

33. **Acronychia pullei** Lauterb. Bot. Jahrb. **55**: 250, 251. 1918; Nova Guinea (Bot.) **14**: 144. 1924. TYPE: *Pulle 645*, West Irian, Mt. Hellwig.

Small to medium tree to 27 m.; branchlets glabrous. Leaves trifoliolate (occasional leaves unifoliolate); petiole glabrous, 1.5–6 cm. long; leaflets subcoriaceous to coriaceous, glabrous, elliptic to obovate to broadly oblanceolate, 5.5–20 cm. long, 2.5–7.5 cm. wide, base obtuse to attenuate, main veins 10–14 on each side of the midrib, apex rounded to obtuse or occasionally obtusely acuminate, the acumen to 0.3 cm. long. Inflorescences usually many-flowered, 4.5–8.5 cm. long, axes and branches glabrous. Flowers 9–13 mm. long; pedicels glabrous to finely pubescent, 4–13 mm. long; sepals glabrate to puberulent, broadly rounded, 1–1.5 mm. long, 2–2.2 mm. wide; petals glabrous to sparsely appressed-pubescent abaxially, glabrous to appressed-pubescent adaxially; disc glabrous, 0.6–1 mm. high, 2–2.8 mm. wide; ovary glabrous, without septicidal fissures; style glabrous. Fruits yellow, drying blackish, gabrous, without septicidal fissures, subglobose to subturbinate, 9–10 mm. wide, base rounded to narrowly truncate, apex rounded or obtusely apiculate, the apiculum to 1 mm. long; epicarp drying less than 0.5 mm. thick, semifleshy, without evident mesocarp; endocarp subcartilaginous. Seeds gray-brown, about 4 mm. long.

DISTRIBUTION. West Irian, Territory of New Guinea and Papua; montane rain forests and cloud forests; 1750–3210 meters. See MAP 6.

West Irian. Mt. Hellwig, *Pulle 645* (K, L, U, isotypes). **Territory of New Guinea.** WESTERN HIGHLANDS DISTRICT: 8 miles NW of Wabag, *Saunders 1045* (CANB); lower slopes of Mt. Hagen, *Saunders 630* (CANB, US). EASTERN HIGHLANDS DISTRICT: Mt. Wilhelm, *Brass 30443* (CANB, US), *Stone LAE 53239* (LAE), *Wade ANU 7335* (CANB); Marafunga, about 20 miles NW of Goroka, *Hartley 13262* (CANB), *Millar NGF 40671* (CANB), *NGF 40699* (CANB); Daulo Camp, *Pullen 487* (CANB, US). MOROBE DISTRICT: Mt. Sarawaket, *Clemens 8342* (A); Sambanga, *Clemens 7750* (A, L); Busu River, *Clemens 6274* (A). **Papua.** CENTRAL DISTRICT: Mt. Tafa, *Brass 4883* (A, NY).

The type collection of *Acronychia pullei*, from West Irian, differs from the remaining material of this species, all of which is from eastern New Guinea, in having fewer-flowered inflorescences with slightly longer, more slender flowers. In other respects the specimens from the two areas are reasonably similar.

34. **Acronychia gurakorensis** Hartley, sp. nov.

Arbor parva usque 6 m. alta; ramulis glabris; foliis trifoliolatis (foliis frequentibus unifoliolatis); petiolo glabro, 3.5–7 cm. longo; foliolis chartaceis, glabris, ellipticis, 9–16.5 cm. longis, 4–6.2 cm. latis, basi cuneatis vel attenuatis, venis primariis utrinsecus costa 8–12, apice acuminatis, acumine usque 1.5 cm. longo; inflorescentiis unifloris vel paucifloris, 2.5–4 cm. longis, axi et ramulis glabratis; floribus 7–8 mm. longis, pedicellis glabratis, ca. 3.5 mm. longis; sepalis glabris, obtuse triangularibus, 1 mm. longis, 1.7 mm. latis; petalis glabris; disco glabro, 1 mm. alto, 1.8 mm. lato; ovario pubescenti, sine fissuris septicidalibus; stylo basin versus pubescenti, aliter glabro; fructibus luteis, in sicco atrorubiginosis, mox glabris, sine fissuris septicidalibus, subglobosis, ca. 20 mm. latis, basi rotundatis, apice parum depressis; epicarpio in sicco minus quam 0.5 mm. crasso, semicarnoso, mesocarpio non evidenti; endocarpio subcartilagineo; seminibus nigricantibus, ca. 5 mm. longis. HOLOTYPUS: *Brass 29484* (US). FIGURE 19.

DISTRIBUTION. Known only from the type locality; foothill rain forests from 450 to 640 meters.

Territory of New Guinea. MOROBE DISTRICT: Gurakor, *Brass 29484* (US, holotype); Buko Creek just S of Gurakor, *Hartley 9704* (CANB), *Millar NGF 14443* (CANB).

Acronychia gurakorensis is apparently closely related to *A. macrocalyx* and *A. dimorphocalyx*, the three having in common unusually large fruits with semifleshy epicarp. *Acronychia gurakorensis* is distinguished from the other two species by its smaller sepals.

35. **Acronychia macrocalyx** Hartley, sp. nov.

Arbor 13 m. alta; ramulis glabris; foliis trifoliolatis; petiolo glabro, 4–7 cm. longo; foliolis subcoriaceis, glabris, ellipticis, 9.5–17 cm. longis, 5–8.5 cm. latis, basi cuneatis, venis primariis utrinsecus costa 10–11, apice obtusis; inflorescentiis paucifloris, 6–8 cm. longis, axi et ramulis glabris vel glabratis; floribus 10 mm. longis, pedicellis puberulis, ca. 3.5 mm. longis; sepalis puberulis, in fructu deciduis, late ovatis vel suborbicularibus, 4.5–5 mm. longis, 4–5 mm. latis; petalis basin versus abaxialiter subtiliter pubescentibus, adaxialiter glabris; disco glabro, 0.3 mm. alto, 2.4 mm. lato; ovario apice pubescenti, aliter glabro, sine fissuris septicidalibus; stylo basin versus pubescenti, aliter glabro; fructibus in sicco atro-brunneis, apice subtiliter pubescentibus, aliter glabris, sine fissuris septicidalibus, subglobosis, ca. 18 mm. latis, basi et apice rotundatis; epicarpio in sicco ca. 0.8 mm. crasso, semicarnoso, mesocarpio non evidenti; endocarpio subcartilagineo; seminibus (non plane maturi) rubiginosis, ca. 4 mm. longis. HOLOTYPUS: *Henty NGF 29016* (BRI). FIGURE 20.

DISTRIBUTION. Known only from the type collection.

Territory of New Guinea. MOROBE DISTRICT: Lake Trist, mossy fagaceous forest, 1620 meters, *Henty NGF 29016* (BRI, holotype; CANB, LAE, isotypes).

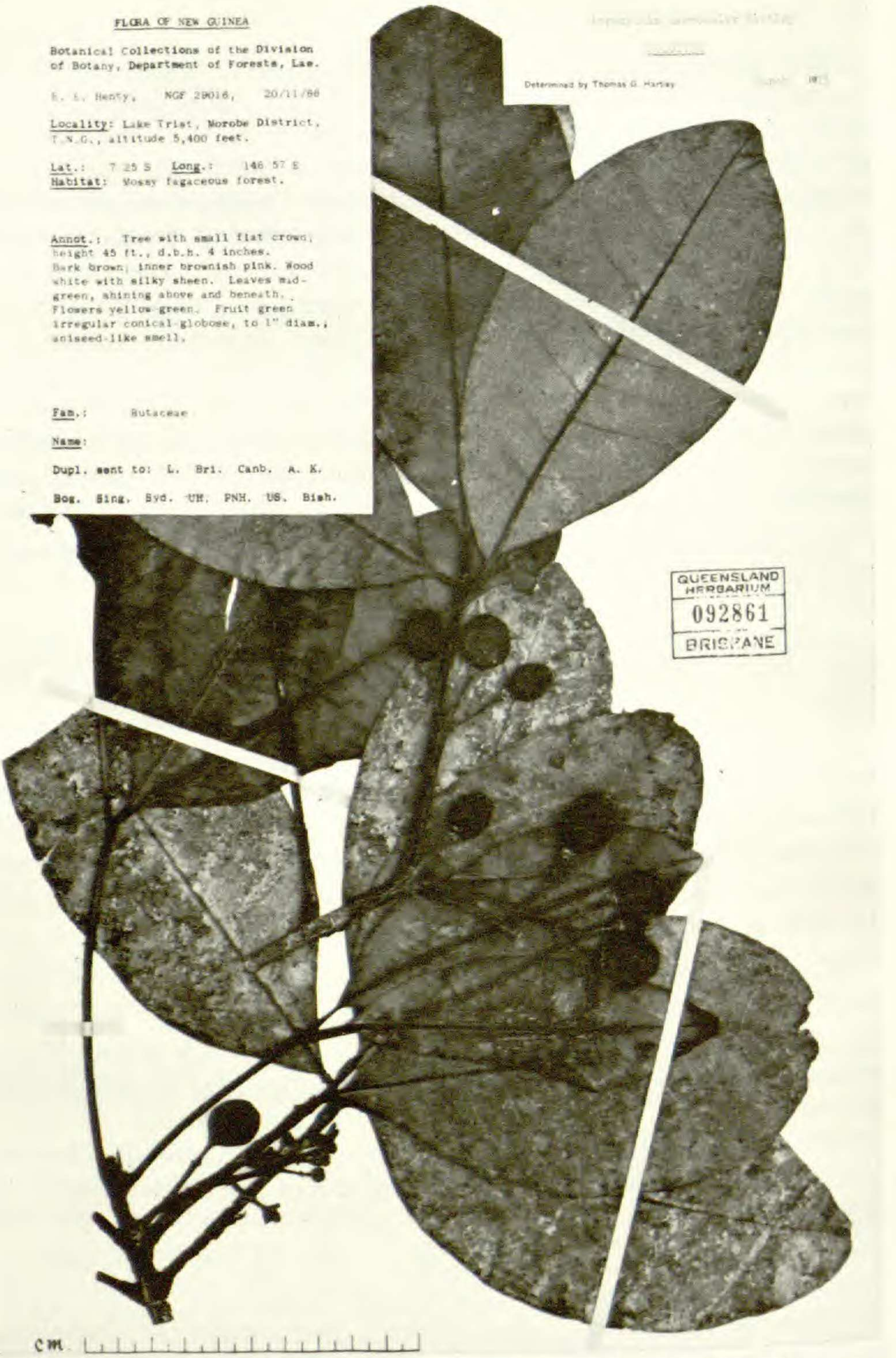


FIGURE 20. *Acronychia macrocalyx* Hartley, photograph of type (BRI).

Acronychia macrocalyx differs from all other species of the genus in having sepals that are deciduous early in fruit. This is an unusual character in this instance since at the stage of dehiscence the sepals are quite thick and not at all withered as might be expected.

36. **Acronychia dimorphocalyx** Hartley, nom. & stat. nov.

Acronychia trifoliolata Zoll. & Mor. var. *pauciflora* Val. Bull. Dept. Agr. Ind. Neerl. **10:** 23. 1907. TYPE: *Atasrip (Wichmann Expedition) 175*, West Irian, Temena River.

Small tree 2 m.; branchlets glabrous. Leaves trifoliolate (occasional leaves unifoliolate); petiole glabrous, 3–12 cm. long; leaflets chartaceous to subcoriaceous, glabrous, elliptic-oblong to narrowly oblanceolate, 12.5–22 cm. long, 3.5–5.5 cm. wide, base cuneate to attenuate, main veins 11–15 on each side of the midrib, apex obtuse to acuminate, the acumen to 1 cm. long. Inflorescences few-flowered, 5.5–6 cm. long, axes and branches glabrate to finely pubescent. Flowers 5.5 mm. long; pedicels finely pubescent, 0.5 mm. long; sepals puberulent, strongly dimorphic, the outer pair suborbicular, 4 mm. long, 4.5 mm. wide, the inner pair obovate, 3.5 mm. long, 2.5 mm. wide; petals glabrate abaxially, glabrous adaxially, semi-persistent in fruit; disc glabrous, 0.3 mm. high, 1.5 mm. wide; ovary densely pubescent, without septicidal fissures; style pubescent toward the base, otherwise glabrous. Fruits yellowish green, drying reddish brown, glabrous at maturity, without septicidal fissures, subglobose, about 20 mm. wide, base and apex rounded; epicarp drying less than 0.5 mm. thick, semi-fleshy, without evident mesocarp; endocarp pergamentaceous. Seeds not seen.

DISTRIBUTION. West Irian, widely disjunct from the Sorong District to the Temena River; lowland rain forests.

West Irian. Sorong District, *van Royen 3329* (CANB); Temena River, *Atasrip (Wichmann Expedition) 175* (L, isotype of *Acronychia trifoliolata* Zoll. & Mor. var. *pauciflora* Val.).

The two collections of this species differ greatly in leaf size: *van Royen 3329* has petioles to 12.5 cm. long and leaflets to 22 cm. long, while the *Atasrip* collection has petioles to 6 cm. long and leaflets to 12.5 cm. long. Flowers and fruit (the latter immature in the *Atasrip* collection) of the two collections are so similar, however, that it seems best to consider them as one species.

A new name is required here since the epithet *pauciflora* is pre-empted at the level of species in *Acronychia*.

37. **Acronychia trifoliolata** Zoll. & Mor. in Zoll. Nat. Geneesk. Arch. Neerl. Ind. 2: 585. 1845. TYPE: *Zollinger 2530*, Java, Tengger prope Gebok Klakka.

This species is extremely variable, having three nearly allopatric varieties (see MAPS 7 and 8) and a number of lesser entities, especially in the typical variety. Although the fruits of the varieties differ greatly at the extremes, there is, nevertheless, nearly complete intergradation in this character. There are no clear-cut flower differences.

KEY TO THE VARIETIES

1. Fruits 5–18 mm. wide, epicarp drying 0.3–4 mm. thick, with woody, subwoody, or spongy-crustaceous mesocarp.
   2. Sepals 0.7–1 mm. long; fruits 5–15 mm. wide, epicarp drying 0.3–2 mm. thick, with woody or subwoody mesocarp; disc glabrous to pubescent. ..... 37a. var. *trifoliolata*.
   2. Sepals 1–1.5 mm. long; fruits 10–18 mm. wide, epicarp drying 2.5–4 mm. thick, with woody to spongy-crustaceous mesocarp; disc glabrous. ..... 37b. var. *ampla*.
1. Fruits 4–6 mm. wide, epicarp drying less than 0.3 mm. thick, semifleshy, without evident mesocarp. ..... 37c. var. *microcarpa*.

37a. **Acronychia trifoliolata** Zoll. & Mor. var. **trifoliolata**.

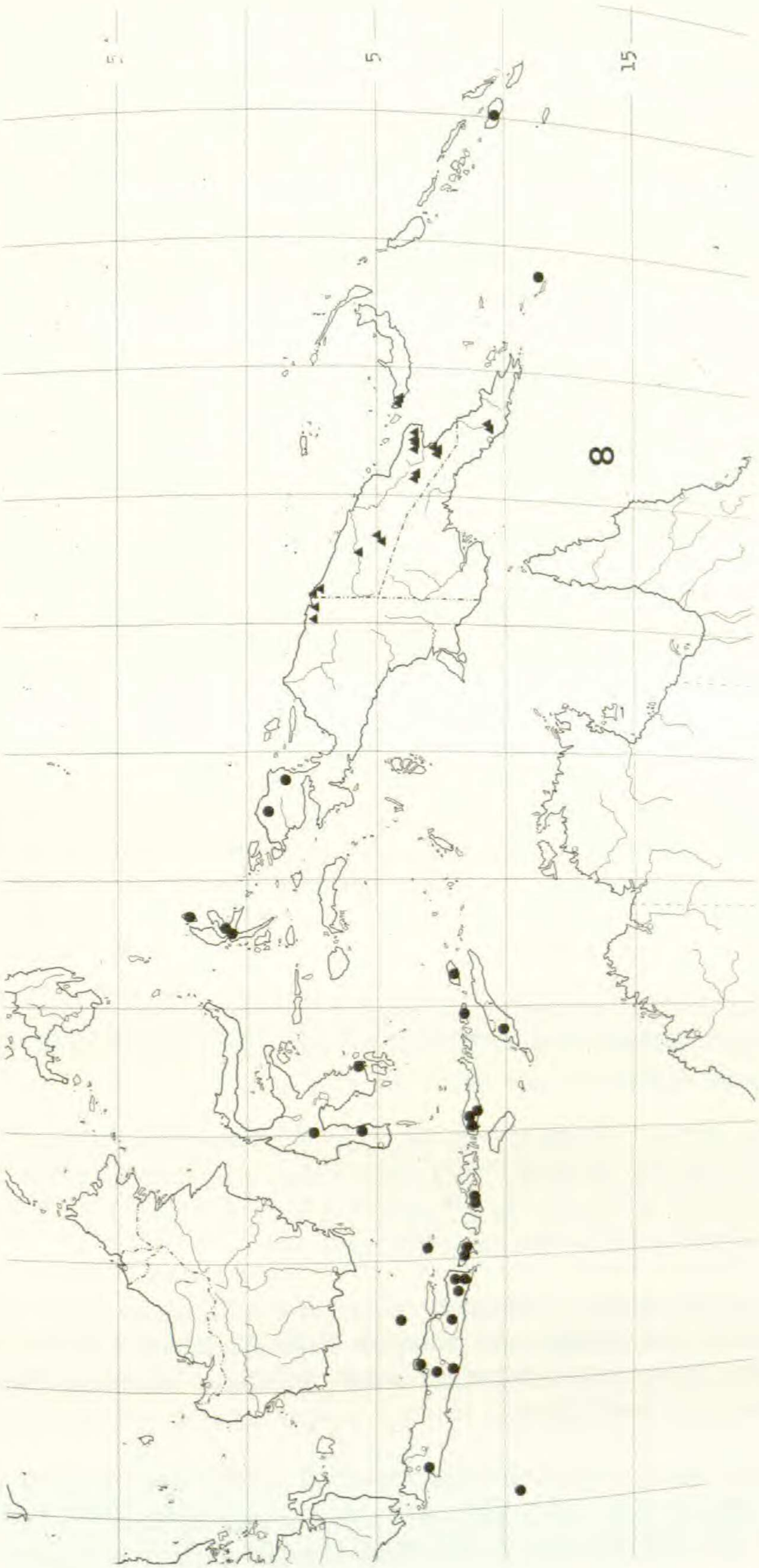
Acronychia halmaheirae Miq. Ann. Mus. Lugd.-Bat. **3**: 245. 1867. TYPE: *Teysmann HB 5651*, Moluccas, Halmahera.

Jambolifera trifoliata O. Ktze. Rev. Gen. Pl. **1**: 102. 1891 (based on *Acronychia trifoliolata* Zoll. & Mor.).

Acronychia andrewsi Baker f. in Andrews, Monog. Christmas Isl. 174. 1900. TYPE: *Andrews*, 1897, Christmas Island.

Small to medium tree to 25 m.; branchlets glabrous. Leaves trifoliolate; petiole glabrous or occasionally glabrate, 1.8–6.5 cm. long; leaflets chartaceous to subcoriaceous, glabrous, elliptic to elliptic-oblong or occasionally obovate to oblanceolate, 5.5–19.5 cm. long, 1.7–7 cm. wide, base cuneate to attenuate, main veins 9–16 on each side of the midrib, apex acuminate (the acumen to 1.5 cm. long) or occasionally obtuse or rounded. Inflorescences few- to many-flowered, 2–9 cm. long, axes and branches glabrous to puberulent. Flowers 4.5–8 mm. long; pedicels glabrous to puberulent or occasionally finely pubescent, 1.5–7 mm. long; sepals glabrous to puberulent or occasionally finely pubescent, obtusely triangular to rounded, 0.7–1 mm. long, 1–1.5 mm. wide; petals glabrous or occasionally sparsely to densely appressed-pubescent abaxially, glabrous adaxially; disc glabrous to pubescent, 0.5–1 mm. high, 1–1.5 mm. wide; ovary pubescent throughout or pubescent only at the apex, with or without apical septicidal fissures; style pubescent toward the base, otherwise glabrous. Fruits yellowish, drying brown, reddish brown or blackish, glabrous throughout, pubescent only at the apex, pubescent at the base and apex, or pubescent throughout, with or without apical septicidal fissures, usually subglobose or ellipsoid but grading to ovoid, turbinate or pyriform, 5–13 mm. wide, base obtuse to rounded or truncate, apex depressed to rounded to apiculate, the apiculum to 2 mm. long; epicarp drying 0.3–2 mm. thick, with woody or subwoody mesocarp; endocarp cartilaginous, glabrous or rarely pubescent. Seeds reddish brown to blackish, 2.5–4.5 mm. long.

DISTRIBUTION. Java and Christmas Island east, discontinuously, to the Solomon Islands; primary and secondary rain forests from sea level to 1750 meters. See MAP 8.



Map 8. Distributions of *Acronychia trifoliolata* Zoll. & Mor. var. *trifoliolata* (dots) and *A. trifoliolata* var. *ampla* Hartley (triangles).

Java and neighboring islands. WESTERN JAVA: Tjisokan, Tjidadap, *Winckel 10* (L), *660β* (U). CENTRAL JAVA: Mt. Oengarang, Medini, *Junghuhn* (L); Jogjakarta District, Sleman, *NIFS Ja 2573* (A, L); Djapara District Semanding, *NIFS Ja 3816* (A, L); Mt. Moerjo, Tjolo, *Kostermans 6247* (A, K, L); Mt. Moerjo, Argodjembanga, *Kostermans 6304* (A, L). EASTERN JAVA: Pasoeroean District, Malang, Djoenggo, *NIFS Ja 1748* (L); Tengger prope Gebok Klakka, *Zollinger 2530* (G, isotype of *Acronychia trifoliolata* Zoll. & Mor.); Klatak River, *Mousset 1037* (L); Banjoewangi District, Mt. Leboeagoeng, *NIFS Ja 2153* (L); Banjoewangi District, Mt. Deleman, *NIFS Ja 2177* (L); Panaroekan District, Kajoemas, *NIFS Ja 3562* (A); Idjen, *van Steenis 12004* (L). Without definite locality: *Junghuhn 274* (L), *274x* (L), *Koorders 6931β* (L), *13126β* (L). CHRISTMAS ISLAND: *Andrews*, 1897 (BM, holotype of *Acronychia andrewsi* Baker f.; K, isotype), KANGEAN ISLAND: N of Ardjasa, *Backer 26924* (L). BAWEAN ISLAND: N of Soerabaja, *Buwalda 3014 (NIFS Ja 4199)* (A, L, NY). **Lesser Sunda Islands.** BALI: Mt. Batukau, *Dilmy 906* (K, L), *Kostermans et al. KK&SS 106* (CANB, L, US). SUMBAWA: Batudulang, Batu Lanteh Mt., *Kostermans 18087* (L); Olat Sekedit, *Kuswata 129* (A, K, L). FLORES: Ruteng & vicinity, *Kostermans & Wirawan 754* (L), *860* (K, L), *Schmutz 431* (L), *467* (L), *476* (L), *985* (L), *1077* (L), *1953* (L), *Verheijen 2147* (L), *2350* (L), *2734* (L); Mt. Ndeki, *Kostermans & Wirawan 105* (L), *180* (K, L); without definite locality, *Schmutz 452* (L), *651* (L), *652* (L), *2095* (L), *Verheijen 2046* (L). ALOR: Kabola Peninsula, *Jaag 358* (L). TIMOR: *Forbes 3893* (A, L), *Metzner 262* (L). WETAR: *Elbert 4676* (CANB, US). **Celebes.** Masamba, Omboan, *NIFS bb 26292* (A, L); Singkang, *Noerkas Expedition van Vuuren 279* (L); Kendari and vicinity, *Beccari*, July, 1874 (K), *NIFS bb 24984* (A, L). **Moluccas.** Morotai, *Kostermans 1146* (A, K, L, LAE), *1155* (A, L), *1158* (L); Halmahera, *De Vriese & Teysmann*, 1859–1860 (A, L), *Idjan & Mochtar 291* (L), *Teysmann HB 5651* (K, L, U, isotypes of *Acronychia halmaheirae* Miq.). **West Irian.** VOGELKOP PENINSULA: Tamrau Range, Aifat River Valley, *van Royen & Sleumer 7112* (CANB, K); Arfak Mts., Angi Gita Lake, *Kostermans 2234* (A, K, L), *2429* (A, K, L). **Papua and neighboring islands.** LOUISIADE ARCHIPELAGO: Rossel Island, Abaleti, *Brass 28294* (A, L, LAE, US), *28377* (A, L, LAE). **Solomon Islands.** Guadalcanal, Sorvarhio Basin, *Kajewski 2699* (A, BISH).

There are several recognizable entities in this variety which are, to a large degree, geographically distinct. They are listed below and their morphological differences are shown in TABLE 1.

1. Java entity — includes all of the collections from Java and the islands of Kangean, Bawean, Bali, Sumbawa, and Alor and the following collections from the island of Flores: *Schmutz 467*, *651*, *652*, *1077*, and *2095* and *Kostermans & Wirawan 105* and *180*.

2. Christmas entity — includes all of the collections from Christmas Island, Timor, and Wetar and *Noerkas Expedition van Vuuren 279* from the Celebes. The single collection from Christmas Island is the type of *Acronychia andrewsi* Baker f.

3. Flores entity — includes the following collections from the island of Flores: *Schmutz 431*, *452*, *985*, and *1953*; *Verheijen 2046*, *2147*, *2350*, and *2734*; and *Kostermans & Wirawan 754* and *860*.

4. Moluccas entity — includes the collections from Kendari and vicinity, in the Celebes, and all of the collections from the Moluccas (among the latter the type collection of *Acronychia halmaheirae* Miq.). *Van Royen & Sleumer 7112*, from the Tamrau Range, West Irian, may belong here, but is in immature fruit.

5. Arfak entity — includes the two collections from the Arfak Mountains, West Irian.

6. Rossel entity — includes the two collections from Rossel Island.

7. Solomon entity — includes the single collection from the Solomon Islands.

TABLE 1. **Morphological variation in entities of Acronychia trifoliolata var. trifoliolata.**

	Java	Christmas	Flores	Moluccas	Arfak	Rossel	Solomon
Petals glabrous abaxially	X	X	X			X	
Petals pubescent abaxially				X	X		X
Disc glabrous		X	X	X	X	X	
Disc at least partially pubescent	X						X
Ovary pubescent only at apex		X	X			X	
Ovary pubescent throughout	X			X	X		X
Fruits 4–7 mm. wide	X	X				X	X
Fruits 8–13 mm. wide			X	X	X		
Fruit apex rounded to apiculate	X	X		X	X	X	X
Fruit apex depressed			X				
Endocarp glabrous	X	X	X	X		X	X
Endocarp pubescent					X		

37b. **Acronychia trifoliolata** Zoll. & Mor. var. **ampla** Hartley, var. nov.

Arbor parva vel mediocris usque 20 m. alta; ramulis novellis glabris vel glabratis; foliis trifoliolatis; petiolo glabro vel raro sparse puberulo, 2.5–9 cm. longo; foliolis chartaceis vel subcoriaceis, glabris, ellipticis vel elliptico-oblongis vel oblanceolatis, 7–21 cm. longis, 3–7 cm. latis, basi cuneatis vel attenuatis, venis primariis utrinsecus costa 7–13, apice acuminatis, acumine 0.5–1.5 cm. longo; inflorescentiis paucifloris vel multifloris, 2.5–6.5 cm. longis, axi et ramulis glabratis vel puberulis; floribus 7.5–9 mm. longis, pedicellis puberulis vel subtiliter pubescentibus, 0.5–4.5 mm. longis; sepalis glabris vel puberulis, triangularibus vel late rotundatis, 1–1.5 mm. longis, 1–3.5 mm. latis; petalis abaxialiter glabris vel dense adpresse pubescentibus, adaxialiter glabris vel sparse pubescentibus; disco glabro, 0.7–1 mm. alto, 1.5–2 mm. lato; ovario omnino pubescenti vel tantum apice pubescenti vel interdum tantum basi et apice pubescenti, fissuris septicidalibus

apicalibus vel nullis; stylo basin versus pubescenti, aliter glabro; fructibus luteis, in sicco rubiginosis vel nigricantibus, glabris vel sparse adpresse pubescentibus, fissuris septicidalibus apicalibus vel nullis, globosis vel subglobosis vel interdum subturbinatis, 10–18 mm. latis, basi rotundatis, apice rotundatis vel apiculatis, apiculo usque 2 mm. longo; epicarpio in sicco 2.5–4 mm. crasso, mesocarpio ligneo vel spongioso-crustaceo; endocarpio cartilagineo; seminibus rubiginosis vel nigricantibus, 4.5–5 mm. longis. HOLOTYPUS: *Hartley 12083* (CANB).

DISTRIBUTION. West Irian, Territory of New Guinea (including New Britain) and Papua; primary and secondary rain forests and monsoon forests; sea level to 1650 meters. See MAP 8.

West Irian. Hollandia (Djajapura) and vicinity, *Brass 8955* (A, BRI, L), *Gjellerup 952* (K, L), *Koster BW 4296* (CANB), *van Royen & Sleumer 6465* (CANB, K), *van der Sijde BW 4085* (CANB), *BW 5514* (CANB). **Territory of New Guinea.** SEPIK DISTRICT: Vanimo Subdistrict, Krisa, *Gillison NGF 25250* (CANB); Aitape Subdistrict, near Goiniri, *Darbyshire & Hoogland 8026* (CANB); Ambunti Subdistrict, near Wagu, *Hoogland & Craven 10366* (CANB). WESTERN HIGHLANDS DISTRICT: Jimmi Valley, Tagan River, *Womersley & Millar NGF 8556* (CANB, LAE); Baiyer River, *Millar NGF 40818* (BRI, L, LAE). EASTERN HIGHLANDS DISTRICT: 5 miles S of Sassaura, *Hartley 12083* (CANB, holotype); Kassam Pass, *Henty & Vandenberg NGF 29336* (CANB). MOROBE DISTRICT: Boana, *Clemens 8269* (A, L), *41670a* (A); Ogeramuang, *Clemens 5079* (A); near Aregenang, *Foreman NGF 48131* (CANB); Yunziang, *Clemens 2340a* (A), *4102* (A), *6428a* (A); Wagau, *Womersley NGF 19325* (CANB); Aseki, *Streimann LAE 51972* (LAE), *Streimann & Kairo NGF 39063* (BRI, CANB, L, LAE); upper Watut River, Minnoa Creek, *Kairo NGF 47683* (CANB, LAE); without definite locality, *Clemens 6642* (A). NEW BRITAIN: upper Pulei River near Benum, *Henty & Frodin NGF 27297* (CANB, LAE); near Asuk, *Buderus NGF 25511* (CANB, L). **Papua.** CENTRAL DISTRICT: Laloki River about 3 miles E of Sogeri, *Hartley 10731* (CANB); Siri-numu area about 3 miles S of Sogeri, *Schodde 2985* (CANB).

The epithet *ampla* refers to the relatively large fruit of this variety.

As in *Acronychia trifoliolata* var. *trifoliolata*, there is considerable variation here in the indumentum of the petals, which range from glabrous to densely pubescent abaxially and glabrous to sparsely pubescent adaxially. The ovary is also variable in this characteristic, ranging from pubescent only at the apex to pubescent throughout.

Acronychia acronychioides, an endemic of north Queensland, appears to be closely related to variety *ampla* of *A. trifoliolata*, being especially similar to the collections from Hollandia (Djajapura) and vicinity.

37c. **Acronychia trifoliolata** Zoll. & Mor. var. **microcarpa** Hartley, var. nov.

Arbor parva vel mediocris usque 27 m. alta vel frutex; ramulis glabris; foliis trifoliolatis (foliis infrequenter unifoliolatis); petiolo glabro, 1–7 cm. longo; foliolis chartaceis vel subcoriaceis, glabris, anguste vel late ellipticis vel interdum oblanceolatis, 5–15 cm. longis, 2.3–6 cm. latis, basi cuneatis

vel attenuatis, venis primariis utrinsecus costa 8–15, apice acuminatis (acumine usque 2 cm. longo) vel interdum obtusis; inflorescentiis paucifloris vel multifloris, 2–8 cm. longis, axi et ramulis glabris vel puberulis; floribus 5–9 mm. longis, pedicellis glabris vel puberulis, 3–6 mm. longis; sepalis glabris vel puberulis, obtuse triangularibus vel rotundatis, 0.3–0.8 mm. longis, 0.5–1 mm. latis; petalis abaxialiter sparse adpresse pubescentibus vel glabris, adaxialiter glabris; disco glabro, 0.5–1 mm. alto, 1–1.7 mm. lato; ovario omnino pubescenti vel tantum apice pubescenti, fissuris septicidalibus apicalibus vel nullis; stylo basin versus pubescenti, aliter glabro; fructibus luteis vel albis, in sicco rubiginosis vel nigricantibus, sparse adpresse pubescentibus vel glabris, fissuris septicidalibus apicalibus vel nullis, subglobosis, 4–6 mm. latis, basi et apice rotundatis; epicarpio in sicco minus quam 0.5 mm. crasso, semi-carnoso, mesocarpio non evidenti; endocarpio pergamentaceo; seminibus nigricantibus, 2.5–3.5 mm. longis. HOLOTYPUS: *Schodde & Craven 4805* (CANB).

DISTRIBUTION. Territory of New Guinea and Papua; primary and secondary foothill and montane rain forests; 1050–2400 meters. See MAP 7.

Territory of New Guinea. EASTERN HIGHLANDS DISTRICT: Goroka Subdistrict, near Dunantina, *Hoogland & Pullen 5256* (CANB). MOROBE DISTRICT: Wagau, *Womersley NGF 17911* (CANB), *19190* (CANB); Aseki and vicinity, *Craven & Schodde 1138* (CANB), *Schodde & Craven 4805* (CANB, holotype), *Streimann LAE 51969* (LAE); Yamap and vicinity, *Kairo NGF 27549* (CANB), *Streimann & Kairo NGF 47592* (CANB, L, LAE); Wau-Salamaua Road near Skindewai, *Womersley & Millar NGF 8337* (CANB); Lake Trist, *Henty NGF 29014* (CANB), *Womersley NGF 24903* (CANB, LAE). **Papua.** CENTRAL DISTRICT: Mt. Tafa, *Brass 5043* (A, NY, UC, US); Woitape, *Corner & Gray NGF 12920* (BRI), *Lelean LAE 54522* (CANB, LAE), *Ridsdale & Woods NGF 33782* (CANB); Woitape-Kosipi Road near Uriko, *van Royen NGF 20243* (CANB); Mt. Kumme, E of Woitape, *van Royen NGF 20417* (CANB); Piati, *Carr 16119* (CANB); Isuarava, *Carr 15377* (CANB), *15553* (CANB); Alola, *Carr 13879* (CANB); Lala River, *Carr 15659* (CANB), *15706* (CANB); Boridi, *Carr 14382* (CANB). MILNE BAY DISTRICT: N slopes of Mt. Dayman, Maneau Range, *Brass 23184* (A, L, LAE), *23303* (CANB); NE outlying ridge of Mt. Simpson, *Pullen 7823* (CANB).

The petals and ovaries have the same variations in indumentum in var. *microcarpa* as in the preceding variety of *Acronychia trifoliolata*, variety *ampla*.

The small fruits, lacking evident mesocarp, distinguish this variety from the two above. It is most closely related to the small-fruited entities of var. *trifoliolata*, some collections of which have very thin, subwoody mesocarp. There also may be a close relationship with *Acronychia carrii*, which, except for having larger flowers and fruits, matches very closely some of the higher-elevation collections of this variety (see especially *Brass 5043* and *van Royen NGF 20243* and *NGF 20417*).

38. **Acronychia reticulata** Lauterb. Bot. Jahrb. **55**: 251. 1917. LECTOTYPE: *Ledermann 10294*, Territory of New Guinea.

Acronychia reticulata Lauterb. var. *glabra* Lauterb. *ibid.* 252. TYPE: *Branderhorst 336*, West Irian.

Small tree to 15 m.; younger branchlets densely pubescent to tomentose. Leaves trifoliolate (occasional leaves unifoliolate); petiole densely pubescent to tomentose, becoming glabrate with age, 3–7 cm. long; leaflets subcoriaceous, pubescent below, becoming glabrate with age, usually glabrous above, elliptic to obovate to oblanceolate, 6–21 cm. long, 3.5–8 cm. wide, base cuneeate, main veins 10–15 on each side of the midrib, apex rounded to obtuse to acuminate, the acumen to 1 cm. long. Inflorescences few- to many-flowered, 4–7.5 cm. long, axes and branches densely pubescent to tomentose, becoming glabrate with age. Flowers about 9 mm. long; pedicels densely pubescent, 1–2 mm. long; sepals densely to rather sparsely pubescent, obtusely deltoid to triangular, 1.5–2 mm. long, 1.2–2.5 mm. wide; petals densely appressed-pubescent abaxially, glabrous adaxially; disc glabrous, 1 mm. high, 2–2.5 mm. wide; ovary pubescent, with or without apical septicidal fissures; style pubescent toward the base, otherwise glabrous. Fruits drying reddish brown, finely appressed-pubescent, with or without apical septicidal fissures, subglobose, 12–16 mm. wide, base and apex rounded; epicarp drying 2–3 mm. thick, with spongy-crustaceous mesocarp; endocarp cartilaginous. Seeds dark reddish brown, 4.5 mm. long.

DISTRIBUTION. West Irian and Territory of New Guinea; foothill rain forests to 1100 meters.

West Irian. Noord River, *Branderhorst 336* (K, L, U, isotypes of *Acronychia reticulata* Lauterb. var. *glabra* Lauterb.). **Territory of New Guinea.** SEPIK DISTRICT: Prospect Creek near Frieda River, *Henty & Foreman NGF 42543* (CANB, LAE); Mt. Turu, Prince Alexander Range, *Pullen 1436* (CANB); Lordberg, Sepik River, *Ledermann 10294* (K, lectotype of *Acronychia reticulata* Lauterb.).

The type collection of *Acronychia reticulata* var. *glabra* has only very mature leaves which have lost most of their pubescence with age.

Lauterbach cited three collections, all from the Sepik River, in the original description of *Acronychia reticulata: Ledermann 9781*, *10294*, and *12869*.

This species, *Acronychia reticulata*, appears to be closely related to *A. trifoliolata* var. *ampla*, differing mainly in being more pubescent. There also may be a fairly close relationship with *A. cartilaginea* (q.v.).

39. **Acronychia ledermannii** Lauterb. Bot. Jahrb. **55**: 252. 1917. NEOTYPE: *Brass 30585*, Territory of New Guinea.

Small to medium tree to 20 m.; branchlets glabrous. Leaves trifoliolate (occasional leaves unifoliolate); petiole glabrous, 1.8–6 cm. long; leaflets

chartaceous to coriaceous, drying reddish brown when young, pale green or yellowish green when older, glabrous, elliptic to elliptic-oblong or obovate to oblanceolate, 5–17 cm. long, 2–6.2 cm. wide, base cuneate to attenuate, main veins 9–12 on each side of the midrib, apex acuminate, the acumen to 2 cm. long. Inflorescences few-flowered, 4–10 cm. long, axes and branches glabrous to glabrate. Flowers 9–14 mm. long; pedicels glabrate, 1–3 mm. long; sepals puberulent, rounded, 0.7–1.5 mm. long, 1.2–2 mm. wide; petals glabrous to finely appressed-pubescent abaxially, sparsely to rather densely pubescent adaxially; disc glabrous, 0.7–1 mm. high, 1.5–2.3 mm. wide; ovary sparsely pubescent at the apex, otherwise glabrous, with or without apical septicidal fissures; style pubescent at the base, otherwise glabrous. Fruits pale yellow, drying yellowish brown to dark brown, glabrous, with or without apical septicidal fissures, globose to subpyriform, 12–23 mm. wide, base rounded to truncate, apex rounded; epicarp drying about 4 mm. thick, with spongy-crustaceous mesocarp; endocarp subcartilaginous. Seeds reddish black, 3.5–5 mm. long.

DISTRIBUTION. Territory of New Guinea and Papua; montane rain forests from 1500 to 2700 meters.

Territory of New Guinea. WESTERN HIGHLANDS DISTRICT: Minj Subdistrict, upper Nona River, *Saunders 757* (CANB). EASTERN HIGHLANDS DISTRICT: Mt. Wilhelm, *Brass 30585* (A, neotype; CANB, US, isotypes); Marafunga, *Millar NGF 40761* (CANB, LAE), *Stevens LAE 51016* (CANB, LAE); Goroka, *Womersley NGF 4466* (L, LAE); Korofunota, via Goroka, *Womersley & Floyd NGF 6942* (CANB); Omahaiga River, Mt. Otto area, *Robbins 833* (CANB); Mt. Otto, *Brass 30843* (CANB, US); near Waisa, about 15 miles SW of Okapa, *Hartley 13110* (CANB); Purosa, Okapa area, *Brass 31608* (CANB, US). MOROBE DISTRICT: Spreader Divide about 6 miles NW of Aseki, *Schodde & Craven 4987* (CANB). **Papua.** SOUTHERN HIGHLANDS DISTRICT: Ialibu, *Pullen 2750* (CANB), *Womersley & Woolliams NGF 12384* (BRI, L, LAE).

The color of the leaves in dried condition distinguishes *Acronychia ledermannii* from the other species of the genus.

Chalcid wasps, noted in the fruits of several other species of *Acronychia* as well, were found in the majority of the fruits of this species. The wasps have no apparent effect on the size or external structure of the seed in which they are contained or on that of the fruit. There is also a lack of any noticeable galling effect on the flowers.

The collections cited by Lauterbach in the original description, *Ledermann 12054*, *12134*, and *12162*, all from montane forest at 2070 meters in the Schrader Range, Territory of New Guinea, were apparently destroyed during World War II.

The nearest relative of *Acronychia ledermannii* is probably *A. trifoliolata* var. *ampla*.

40. **Acronychia acronychioides** (F. Muell.) Hartley, comb. nov.

Euodia acronychioides F. Muell. Frag. Phytogr. Austral. 4: 117. 1864. TYPE: *Dallachy*, Queensland, Rockingham Bay.

Acronychia melicopoides F. Muell. Frag. Phytogr. Austral. **5:** 3. 1865 (*nomen illegit.*, based on *Euodia acronychioides* F. Muell.).
Jambolifera melicopodes O. Ktze. Rev. Gen. Pl. **1:** 102. 1891 (*nomen illegit.*, based on *Acronychia melicopoides* F. Muell.).

Small to rather large tree to 25 m.; younger branchlets puberulent to glabrate. Leaves trifoliolate (rarely occasional leaves unifoliolate); petiole puberulent, at least adaxially or at the base, becoming glabrous with age, 3–8 cm. long; leaflets chartaceous to subcoriaceous, glabrous, elliptic-oblong to oblanceolate, 7–21 cm. long, 2.3–6.5 cm. wide, base cuneate to attenuate, main veins 10–13 on each side of the midrib, apex obtusely acuminate, the acumen to 0.8 cm. long. Inflorescences many-flowered, 3–9 cm. long, axes and branches puberulent to finely pubescent. Flowers 9–11 mm. long; pedicels puberulent to finely pubescent, 3–7.5 mm. long; sepals puberulent, obtusely triangular to broadly elliptic to orbicular, 1.5–3 mm. long, 2–3 mm. wide; petals glabrous, occasionally semipersistent in fruit; disc glabrous, 0.8–1 mm. high, 1.6–1.8 mm. wide; ovary pubescent, with or without apical septicidal fissures; style densely pubescent toward the base, otherwise glabrous. Fruits yellow, drying reddish brown to blackish, glabrate at maturity, with or without apical septicidal fissures, subpyriform or occasionally subglobose, 8–11 mm. wide, base broadly stipitate or occasionally rounded, apex rounded; epicarp drying about 1 mm. thick, with woody mesocarp; endocarp cartilaginous. Seeds blackish, about 4 mm. long.

DISTRIBUTION. North Queensland, Cape York Peninsula south to the Eungella Range west of Mackay; rain forests to 1200 meters. See MAP 7.

Queensland. COOK DISTRICT: Tozer Range, ½ mile E of Mt. Tozer, *Brass 19467* (BRI, CANB); Leo Creek, Upper Nesbit River, *Brass 19932* (BRI, CANB); McIvor River N of Cooktown, *Webb & Tracey 7820* (BRI); Upper Parrot Creek, Annan River, *Brass 20214* (BRI, CANB), *20220* (BRI, CANB); Copper Lode Falls on Freshwater Creek 6 miles S of Cairns, *Gittins 2219* (BRI, NSW); Barron River, *Johnson*, 1891 (MEL); Danbulla, *Webb & Tracey 7195* (BRI); Gillies Highway, Atherton Tableland, *Olsen 373* (BRI, NSW); Lake Barrine, *Kajewski 1244* (A, BRI, NY); Gadgarra, *Jones 1494* (CANB), *Kajewski 1078* (A, BRI, K, NY, UC), *1151* (A, BM, BRI, NY); Mulgrave River, *Johnson*, 1891 (MEL); Bellenden Ker Ranges, *Johnson*, 1891 (MEL); Johnstone River, *Ladbrook*, August, 1917 (BRI), *Michael 141* (BRI); Innisfail, *Michael 274* (GH); Tully Falls, *Webb 729* (CANB); El Arish, *Jones 1273* (CANB). NORTH KENNEDY DISTRICT: Herberton Range, *Webb & Tracey 7944* (BRI); head of Wild River, *Bailey*, July 3, 1899 (BRI, NSW); Clump Point Farm, 30 miles SE of Innisfail, *Wyer*, May 11, 1945 (NSW 127105); Mt. Macalister, *Dallachy*, April 9, 1869 (MEL); Sea View Range, *Dallachy*, November, 1864 (MEL); Dalrymple's Gap, *Dallachy*, May 11, 1864 (BRI, MEL); Coast Range, *Dallachy*, February 8, 1866 (MEL); Rockingham Bay, *Dallachy*, March, 1864 (MEL, holotype of *Euodia acronychioides* F. Muell.; BM, BRI, K, L, W, isotypes); Mt. Spec forestry camp near Bambaroo, *Francis*, November, 1933 (BRI). SOUTH KENNEDY DISTRICT: Cawley State Forest W of Cathu, between Mackay and Proserpine, *Webb & Tracey 7682* (BRI); Dalrymple Heights & vicinity, *Clemens*, July-November, 1947 (BRI), September-October, 1947 (BRI, MICH, NY, UC), September-November, 1947 (AD, BISH, GH, K, MICH,

NY, UC); Eungella, Netherdale area, *Forest Foreman Cole 17* (BRI); Eungella Range, *White 12872* (BRI).

As is mentioned above, in the discussion of the phylogeny of *Acronychia*, this species, *A. acronychioides*, and *A. imperforata* appear to be of extra-Australian ancestry. The idea is supported in this instance since the closest relative of *A. acronychioides*, *A. trifoliolata* var. *ampla*, has the most advanced type of fruit in the entirely-Malesian *A. trifoliata* complex.

41. **Acronychia imperforata** F. Muell. Frag. Phytogr. Austral. **1**: 26. 1858. LECTOTYPE: *Hill*, Queensland, Moreton District, Moreton Bay.

Jambolifera imperforata (F. Muell.) O. Ktze. Rev. Gen. Pl. **1**: 102. 1891.
Acronychia scortechinii F. M. Bailey, Queensl. Agr. Jour. **3**: 281. 1898. SYNTYPES: *Lovell*, Queensland, Wide Bay District, Fraser Island; *Scortechini*, Queensland, Moreton District, Logan River.

Shrub or small tree to 9 m.; branchlets glabrous or rarely glabrate. Leaves unifoliolate; petiole glabrous or rarely glabrate, 0.3–2.5 cm. long; leaflet chartaceous to subcoriaceous, glabrous, often drying somewhat blue-gray above, especially when young, elliptic to elliptic-oblong or obovate to oblanceolate, 3.3–12.5 cm. long, 1.6–5.5 cm. wide, base obtuse to cuneate to attenuate, main veins 6–10 on each side of the midrib, apex rounded to obtusely acuminate, the acumen to 0.5 cm. long. Inflorescences usually few-flowered, 2.5–5 cm. long, axes and branches glabrous to puberulent. Flowers 6–9.5 mm. long; pedicels glabrous to puberulent, 1.5–4.5 mm. long; sepals glabrous or glabrate, obtusely triangular to suborbicular, 1–1.5 mm. long, 1.5–2.5 mm. wide; petals glabrous abaxially, glabrous to sparsely pubescent adaxially; disc glabrous, 0.2–0.5 mm. high, 1.4–2 mm. wide; ovary glabrous throughout or sparsely pubescent only at the apex, without septicidal fissures; style spreading-pubescent toward the base, otherwise glabrous. Fruits orange-yellow, drying dark reddish brown to blackish, glabrous throughout or with a few hairs at the apex, without septicidal fissures, pyriform to subglobose, 10–12 mm. long, base obtuse to broadly stipitate, apex rounded, short-apiculate or somewhat depressed; epicarp drying 0.7–1 mm. thick, with woody mesocarp; endocarp cartilaginous. Seeds reddish black, 4–6 mm. long.

DISTRIBUTION. Cape York Peninsula, Queensland, south to Port Macquarie, New South Wales; coastal scrub except for a few inland localities. See MAP 6.

Queensland. COOK DISTRICT: Newcastle Bay, 2.5 miles S of Somerset, *Brass 18668* (BRI, CANB); Bamaga Mission, 11.2 km. SW of Cape York, *Smith 12350* (BRI); Endeavour River, *Peraich (?) 753* (MEL); Shipton's Flat, on Tin Mine Road, *Smith 14346* (BRI); Granite Creek Road W of Bloomfield, *Webb & Tracey 6210* (BRI); upper Mowbray River, *Brass 2522* (A, BISH, BRI, US). NORTH KENNEDY DISTRICT: Rockingham Bay, *Dallachy* (MEL). PORT CURTIS DISTRICT: Curtis Island, *Dietrich 1013* (MEL); Gladstone, *Hedley* (BRI);

Baffle Creek area, *White*, April, 1920 (BRI). WIDE BAY DISTRICT: Bundaberg, *Boorman*, August, 1912 (NSW 127015); Saw Mill Scrub, Dundowran via Nikenbah, *Tryon*, July, 1928 (BRI); Nikenbah, *Tryon* (BRI); Fraser Island, *Blake 22698* (BRI), *Epps*, October 18, 1919 (BRI), *Hubbard 4420* (BRI, K), *Lovell*, August, 1894 (BRI, syntype of *Acronychia scortechinii* F. M. Bailey), *Petrie*, June, 1917 (BRI), *Webb & Tracey 6334* (BRI); Noosa River 23 miles NE of Gympie, *Smith 12116* (BRI); Hibbett's Mt., Gundiah, *Kajewski 1518* (A, BRI, NY); Lake Cootharaba, *Keys* (BRI); Sunshine Beach via Tewantin, *Harrold*, April 1, 1964 (BRI). MORETON DISTRICT: Coolum Beach, *Clemens*, March 22, 1945 (BRI, GH, MICH, UC); Eumundi, *Bailey & Gunn*, June, 1895 (BRI); Maroochy River, *Kenny*, August, 1912 (BRI); Lake Curramundi, N of Caloundra, *Anderson*, July 14, 1964 (BRI, CANB), *Williams*, March 8, 1969 (BRI); Caloundra, *Blake 4002* (BRI), August, 1933 (BRI); Somerset, *Bailey*, June, 1897 (BRI); Bribie Island, *Clemens 44072* (GH), *Kenny*, August, 1906 (BRI), *Wilson 710* (A); Moreton Bay, *Cunningham 7* (BM, K), *Hill* (MEL, lectotype; K, isotype), *Mueller* (MEL), *Parker*, July, 1918 (A); Brisbane River, *Dietrich 2669* (MEL); Mosquito Creek, *White*, April, 1917 (BRI, NSW); mouth of the Pine River, *Smith 11407* (CANB); Sandgate, *Statter*, April, 1882 (BM), *White*, June, 1918 (A, BRI); Kedron Brook, *Bailey*, June, 1875 (BRI); Toowong, Brisbane, *Everist*, October, 1934 (A, BRI); Stradbroke Island, *Cribb BRIU 1333* (BRI), *White 3367* (A); Logan River, *Scortechini* (BRI, syntype of *Acronychia scortechinii* F. M. Bailey; K, isosyntype); Tugun, *Clemens 42625* (A), *Hubbard 3946* (A); Currumbin, *Longman*, March, 1916 (BRI), *Webb 1534* (CANB), *White Field Naturalists Club Excursion*, September, 1913 (BRI). Without definite locality: *Brown 5332* (BM). **New South Wales.** Cudgen, *Jones 1229* (CANB), *McKee 9518* (CANB, P); Mt. Warning, *Fraser*, January 15, 1936 (NSW 127018); Byron Bay, *White 10449* (A, BRI, NY); Lennox Head, *Baeuerlen*, November, 1891 (NSW 127019); Pebbley Beach, North Ballina, *Johnson & Constable*, June 12, 1957 (NSW 42338); Ballina, *Baeuerlen 429* (NSW); 2.5 miles N of Evans Head, *McGillivray 1938* (NSW); Woody Head, N of Iluka, *Hayes, Turner & McGillivray 2671* (NSW); Iluka, *O'Hara & Coveny 3508* (BRI, NSW), *Williams*, April 12, 1964 (NSW 127021); Clarence River, *Hartley*, July–August, 1915 (NSW 127021), *Wilcox 1875* (MEL); Woolgoolga, *de Beuzeville 700* (NSW); Coffs Harbour, *Boorman*, May 26, 1909 (NSW 127024), June, 1910 (NSW 127025), *Meebold 3474* (NY), *White 7420* (BRI); Bundagen, near Repton, Bellinger River, *Blaxell 153* (NSW); Hat Head, E of Kempsey, *Constable*, January 18, 1953 (NSW 22361); Crescent Head, *Davis*, October 4, 1941 (NSW); 15 miles N of Port Macquarie, *Rodway* (NSW 127026).

Mueller's syntypes of this species, a collection by Hill and another by Mueller, both from Moreton Bay, are mixed: the Kew and Melbourne sheets of the Hill collection are *Acronychia imperforata* and the British Museum duplicate is *A. pauciflora*; and one of several Melbourne sheets of the Mueller collection is *A. imperforata* whereas the others, and the Kew duplicate, are *A. pauciflora*. They were apparently mixed at the time Mueller studied them, since his description applies to both species. The choice of the lectotype and the description of the species presented here is in accordance with the prevailing interpretation of *A. imperforata* by Australian botanists.

Acronychia scortechinii was considered distinct by Bailey on the basis

of its having fruit with unusually fleshy exocarp. It is now evident that this is a minor variation since there are a number of collections, from scattered localities, with similarly fleshy fruits.

Although the geographical distribution of this species is remarkable in Queensland, with a disjunction of about 500 miles between Rockingham Bay and Curtis Island, I have not found sufficient differences among the collections to recognize more than a single taxon. The northern collections, most of which are from rain forest habitats away from the coast, do tend to have larger, thinner-textured leaflets and larger sepals, but the southern collections grade into them so completely that I have not been able to separate them in a key.

The closest relative of *Acronychia imperforata* appears to be the widespread *A. pedunculata*, the collections of the latter from Papua being very similar to the northern Queensland collections of the former. Of the two species, *A pedunculata* appears to be the more primitive since the ovary and fruit often have septicidal fissures. This would suggest that *A. imperforata*, which lacks septicidal fissures, was derived from Malesian stock.

42. **Acronychia pedunculata** (L.) Miq. Fl. Ind. Bat. Suppl. 532. 1861.

Jambolifera pedunculata L. Sp. Pl. **1:** 349. 1753. TYPE: *Jambolifera* L. *Fl. Zeyl. 139.*

Cyminosma ankenda Gaertn. Fruct. **1:** 280. *t. 58, fig. 6.* 1788 (*nomen illegit.*, based on *Jambolifera* L.).

Gela lanceolata Lour. Fl. Cochinch. 232. 1790. TYPE: *Loureiro*, Cochinchina (not seen; at BM, according to Merrill, 1935: 220).

Jambolifera rezinosa Lour. Fl. Cochinch. 231. 1790. TYPE: *Loureiro*, Cochinchina (not seen).

Laxmannia ankenda (Gaertn.) Raeuschel, Nomencl. Bot. ed. 3. 99. 1797.

Cyminosma pedunculata (L.) Roxb. Hort. Beng. 88. 1814; Fl. Ind. **2:** 239. 1832.

Doerrienia malabarica Dennst. Schluess. Hort. Ind. Malab. 31. 1818. TYPE: *Hort. Malab. 5: t. 15.* 1685 (*nomen nudum* according to Manitz, Taxon **17:** 501. 1968).

Acronychia laurifolia Bl. Cat. Gew. Buitenz. 63. 1823; Bijdr. 245. 1825. TYPE: *Blume*, Java.

Ximenia? lanceolata (Lour.) DC. Prodr. **1:** 533. 1824.

Cyminosma resinosa DC. Prodr. **1:** 722. 1824 (based on *Jambolifera rezinosa* Lour.).

Acronychia arborea Bl. Bijdr. 244. 1825. TYPE: *Blume*, Java, Mt. Salak.

Selas lanceolatum (Lour.) Spreng. Syst. Veg. **2:** 216. 1825.

Melicope conferta Blanco, Fl. Filip. ed. 2. 205. 1845. Typified by *Reillo BS 19255* (*Merrill Species Blancoanae 55*), Philippines, Luzon, Rizal Province.

Clausena simplicifolia Dalzell, Hook. Jour. Bot. Kew Gard. Misc. **3:** 180. 1851. TYPE: *Dalzell*, India, Mysore.

Jambolifera arborea (Bl.) Zoll. & Mor. Syst. Verz. Zoll. 14. 1854.

Acronychia apiculata Miq. Fl. Ind. Bat. Suppl. 532. 1861. TYPE: *Teysmann HB 4514*, southern Sumatra.

Acronychia barberi Gamble, Kew Bull. **1915:** 345. 1915. SYNTYPES: *Wight 364*, southern India, Pulney Hills; *Barber 6027*, southern India, Anamalai Hills.

Acronychia lanceolata (Lour.) Forst. ex Crevost & Lemarié, Cat. Prod. Indochina **1:** 173. 1917.

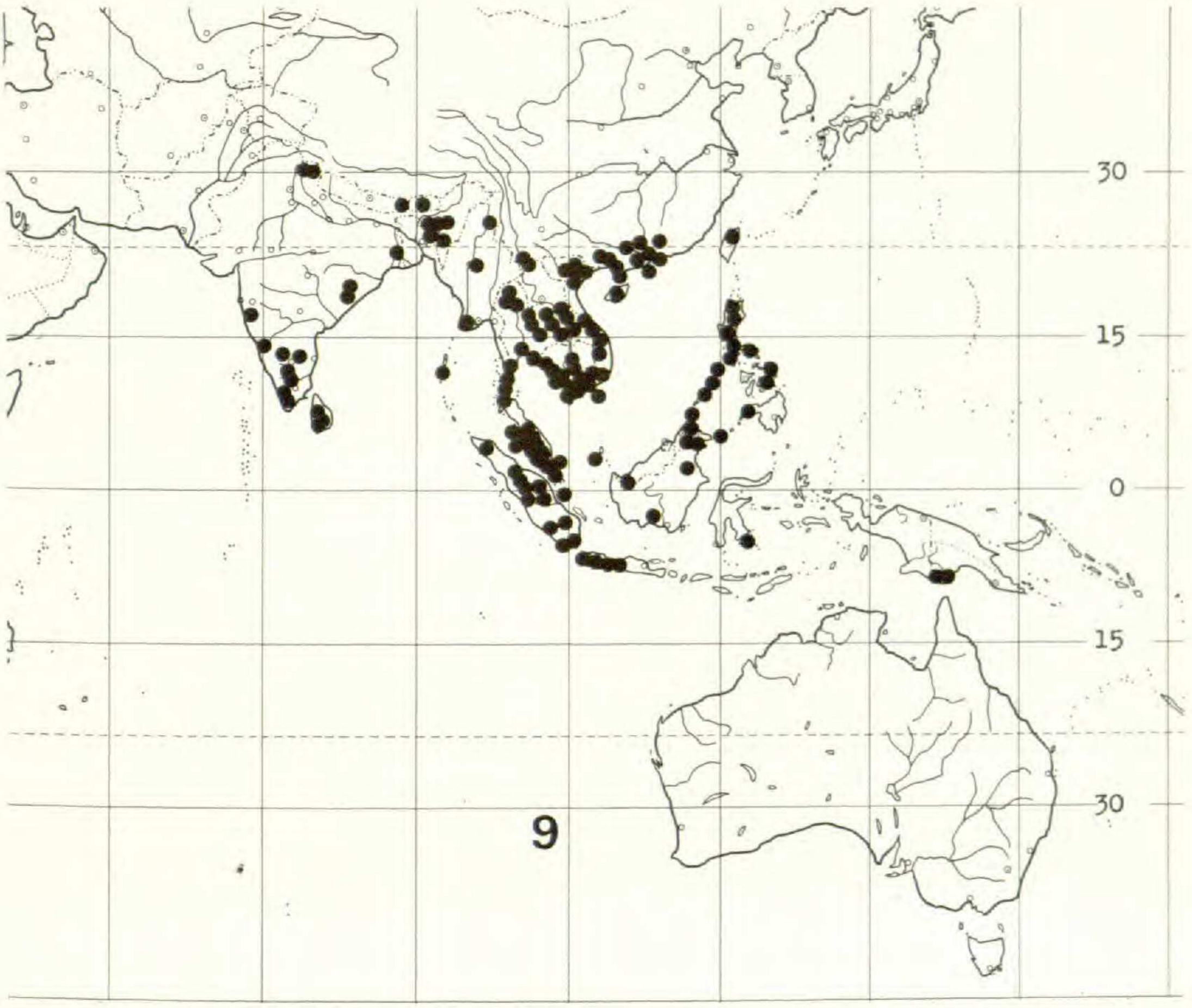
Acronychia resinosa Forst. ex Crevost & Lemarié, Cat. Prod. Indochina **1:** 173. 1917 (based on *Jambolifera rezinosa* Lour.).

Acronychia elliptica Merr. & Perry, Jour. Arnold Arb. **22:** 56. 1941. TYPE: *Brass 6309*, Papua, Western District.

Shrub to small to large tree to 28 m.; younger branchlets glabrous to finely pubescent. Leaves unifoliolate; petiole glabrous to finely pubescent, 0.5–5 cm. long; leaflet chartaceous to coriaceous, glabrous, usually elliptic or elliptic-oblong but grading to obovate, oblanceolate or nearly oblong, 3.5–24.5 cm. long, 2–8.5 cm. wide, base cuneate or occasionally rounded or attenuate, main veins 7–14 on each side of the midrib, apex obtusely acuminate (the acumen to 2 cm. long) or occasionally obtuse or rounded. Inflorescences few- to many-flowered, 2–25 cm. long, axes and branches glabrous to finely pubescent. Flowers 4–12 mm. long; pedicels glabrous to finely pubescent, 2–12 mm. long; sepals glabrous to finely pubescent, triangular to broadly rounded, 0.6–1.5 mm. long, 0.8–2 mm. wide; petals glabrous to sparsely pubescent abaxially, densely to sparsely pubescent or occasionally glabrous adaxially; disc glabrous to pubescent, 0.5–1 mm. high, 1–2 mm. wide; ovary pubescent throughout or rarely pubescent only at the apex, with or without apical septicidal fissures; style pubescent toward the base, otherwise glabrous. Fruits yellowish or white, drying brown to blackish, usually rather sparsely pubescent with a ring of dense, appressed hairs at the base, but grading to tomentose or glabrous, with or without apical septicidal fissures, usually subglobose but grading to ellipsoid, pyriform or broadly conical, occasionally more or less 4-lobed or with several low, longitudinal ribs, 5–15 mm. wide, base obtuse to truncate, apex rounded to acute to apiculate, the apiculum to 4 mm. long; epicarp drying 0.5–3 mm. thick, with woody or subwoody mesocarp; endocarp cartilaginous. Seeds reddish-black to black, 3–7 mm. long.

ILLUSTRATIONS. Engler, A., Nat. Pflanzenfam. III. **4:** 180. *t. 104*. 1896 (as *Acronychia laurifolia*). *Ibid.* ed. 2. **19a:** 308. *t. 140*. 1931 (as *Acronychia laurifolia*). Gaertner, J., *loc. cit.* Koorders, S. H., Exkursionsflora von Java **2:** 423. *t. 77*. 1912 (as *Acronychia laurifolia*). Koorders, S. H. & Th. Valeton, Atlas der Baumarten von Java **2:** *t. 353* 1914 (as *Acronychia laurifolia*). Li, H. L., Woody flora of Taiwan 364. *t. 130*. 1963. Loddiges, C., The Botanical Cabinet **10:** *t. 938*. 1824 (as *Gela lanceolata*). Ochse, J. J. & R. C. Bakhuizen, Indische Groenten 640. *t. 391*. 1931. Vahl, M., Symbolae Botanicae **3:** *t. 61*. 1794 (as *Jambolifera pedunculata*).

DISTRIBUTION. India and Ceylon east to Taiwan and southeast in Malesia to Papua; primary and secondary rain forests and coastal scrubs; sea level to 2200 meters. See MAP 9.



MAP 9. Distribution of *Acronychia pedunculata* (L.) Miq.

India. UTTAR PRADESH: Dehra Dun District, *Datta 19* (A), *Kanjilal 759* (A), *760* (K), *Mukharjee 24* (US), *Osmaston 1207* (NSW), January 30, 1916 (W), *Punj 22* (NY), *Rawat 20* (A), *Singh 26* (MEL, NSW), *33* (NY). MAHARASHTRA: Concan (Konkan), *Law & Stocks* (K), *Stocks, Law, etc.* (BM, GH, MEL, NY, W). MYSORE: Mt. Syhadree, near Tulkut-ghat, *Dalzell* (K, holotype of *Clausena simplicifolia* Dalzell); Hassan District, Harihalli, *Saldanha 9046* (US). MADRAS: Anamalai Hills, *Barber 6027* (K, syntype of *Acronychia barberi* Gamble); Nilgiri Hills, *Clarke 10823B* (BM), *Gamble 16811* (K), *17850* (BM), *20558* (K), *Thomson* (BM, GH, MEL, NY, U, W); Pulney Hills, *Anglade* (A), *Herb. Beddome 1017* (BM), *Bourne 212* (K), *1452* (K), *Janaki 51* (MICH), *Wight 364* (K, syntype of *Acronychia barberi* Gamble); without definite locality, *Cole 54* (K), *67* (K). KERALA (TRAVANCORE): Malabar, *Wight 362* (GH, K, MEL); Courtallum, *Wight 181* (NSW, NY); without definite locality, *Meebold 17107* (W). ORISSA: Ranpur, near Habadih, *Mooney 1353* (K); Puri District, Aran Forest, *Haines 5503* (K). WEST BENGAL: vicinity of Calcutta, *Helfer*, 1836–1838 (A, BM, NY, US), *Wallich 4325* (W). ASSAM: Khasi Hills, *Chand 1923* (MICH), *1967* (MICH), *2065* (MICH), *5927* (MICH), *5974* (MICH), *6112* (MICH), *6354* (MICH), *8291* (MICH, UC), *Clarke 6209* (BM), *45716D* (BM), *Hooker f. & Thomson* (BM, K, MEL, NY, US, W), *King's Collector*, November, 1890 (BM, W), August, 1892 (BM), *Koelz 23582* (MICH), *30245* (MICH, UC), *30302A* (MICH, W), *30389* (MICH), *30633* (MICH), *31075* (MICH, UC, W), *Kurz 242* (US), *Ward* (W); Bamanigaon, *Chand 2499* (MICH); Lushai Hills, Aijal, *Chand 4283* (MICH, UC);

without definite locality, *Jenkins 614* (K), *615* (K). ANDAMAN ISLANDS: South Andaman, *King*, August 22, 1891 (US), *King's Collector*, June 4, 1892 (MEL), June 1, 1893 (A), September 16, 1893 (A), August 11, 1894 (US), January 19, 1895 (A); without definite locality, *Herb. Helfer 1190* (GH, W), *Prain's Collector 58* (A, MEL), *95* (NSW). Without definite locality: *Roxburgh* (BM), *van Royen*, 1779 (BM), *Wallich Cat. No. 1205* (BM, W), *Wight 309* (K, W). **Ceylon.** Iriyagolla, *de Silva 40* (A), *256* (NY); Madulkele, *Worthington 141* (BM); Mt. Allagalla, *Worthington 49* (BM, NSW); Kandy Forest Reserve, *Lam 7346* (A); Nilambe, *Worthington 2864* (BM); Henaratgoda, *Petch*, March 4, 1923 (A); Moon Plains, Parawella, *St. John 24114* (BISH); Patana, Madugoda-Urugala Road, *Simpson 8796* (BM); above Madugoda, *Simpson 9479* (BM); Hurasgiriya, *de Silva 55* (MEL, NY); without definite locality, *Gardner 162* (K, NY), *Koenig* (BM), *Rechinger 2479* (W), *Rudolf*, February, 1896 (MICH), *Thomson* (BM, GH, W), *Thwaites CP 1249* (BM, MEL, W), *Walker 438* (K), *Worthington 1579* (BM), *1754* (BM). **Sikkim.** *Cave* (A, BM), *Hooker f.* (K), *King*, August 29, 1876 (MEL), *Native Collector 605* (GH). **Bhutan.** *Bulley leg. Cooper 1112* (BM). **East Pakistan.** Sylhet, *Wallich Cat. No. 1205B* (K, L, MICH, W); Chittagong, *Hooker f. & Thomson* (GH); Chittagong Hill Tracts, *King's Collector 506* (A); without definite locality, *Herb. Griffith 1190* (GH, W). **Burma.** Myitkyina District, *Parkinson 378* (K); Maymyo Plateau, *Lace 5952* (K); Bassein District, Kyathaung River, Mezali Reserve, *Kermode 7317* (K). **Thailand.** NORTHERN: Doi Pa Ta, *Kerr 4916* (BM); Doi Suthep, *Kerr 1983* (BM), *2299* (BM), *2681* (BM); Doi Angka, *Kerr 6345* (BM, K); Nam Heng (Nam Haeng), *Winit 1740* (K). NORTHEASTERN: Loei, *Bunchuai 147* (K), *1670* (K, P); Phu Kha Ding, *Smitinand 1962* (K); Sakol Nakorn (Sakon Nakhon), *Lakshnakara 1004* (BM, K); Nakorn Panom (Nakhon Phanom), *Lakshnakara 977* (BM). EASTERN: Korat (Nakhon Ratchasima), *Noe 200* (BM), *270* (BM, K), *Put 2241* (BM), *3065* (BM, K); Ubon Ratchathani, *Kerr 8332* (BM), *Lakshnakara 892* (BM), *Phusomsaeng 35* (K, P). CENTRAL: Sriracha (Si Racha), *Collins 408* (BM, K), *472* (K), *577* (US), *736* (US), *830* (US), *905* (A. BISH, US), *905A* (K), *954* (BM, US), *985* (US), *1308* (US), *1371* (US), *1744* (BM, US), *2035* (K, US), *Kerr 2063* (BM, K), *4527* (BM, K). SOUTHEASTERN: Rayaung (Rayong), *Put 2676* (BM); Watana (Watthana Nakhon), *Put 1938* (BM); Chantabun (Chanthaburi), *Kerr 9536* (BM, K), *Lakshnakara 484* (BM); Krat (Ban Bang Phra), *Kerr 9436* (BM), *17837* (BM), *21764* (BM). SOUTHWESTERN: Hua Hin, *Collins 1590* (US), *Kerr 13485* (BM), *16137* (BM); Prachuap (Prachuap Khiri Khan), *Put 3156* (BM, K). PENINSULAR: Bangtapan (Ban Bang Saphan), *Put 1386* (BM), *1395* (BM); Surat Thani, *Put 4115* (K), *Kerr*, August 2, 1927 (BM); Pattani, *Kerr 7244* (BM); Yala, *Put 3681* (BM). Without definite locality: *Collins 426* (BM), *Kerr 11413* (BM), *20139* (BM). **Laos.** Savannakhet, *Poilane 11911* (P), *16349* (P); Phon Than, *Spire 93* (P); Saravane Province, *Poilane 16144* (P); without definite locality, *Poilane 13525* (P). **Cambodia.** Compong Phom (Kompong Thom), *Gourgand* (P); Pursat, *Godefroy 550* (P); Pobang, *Poilane 14322* (P); Kompong Cham, *Béjaud*, July 18, 1930 (A, P); Prey Khmuonh, *Viginein-Roche 1* (P), *2* (P), *3* (P); Kampot, *Geoffray 133* (P), *407* (P), *Hahn 41* (P), *Poilane 385* (P); Elephant Mt., *Poilane 22983* (P). **North Viet Nam.** Phu Tho, *Pételot 1048* (NY, P, US), *1048 bis* (P), *1059* (P); Chan Mong Forest Reserve, *Fleury 32155* (P); Mt. Tam Dao, *Pételot 3883* (NY, P, US); Vinh Yen to Tam Dao, *Pételot 4303* (NY, P, US); Thai Nguyen, *Pételot 5840* (P); Phuc Yen, *Pételot 5841* (NY, P); Quonbi, *Balansa 1180* (P); Tu Phap, *Balansa 3104* (P), *3106* (P); Son Tay, *Balansa 3105* (P), *Pételot 7856* (A); Cho Bo, *Poilane 13160* (P); Hanoi, *Demange*

7782 (P); Hao Nho, *Bon 683* (P); De Tham (Tinh Dao), *Bois 267* (P); Yen Ninh, *Bon 1439* (P); Vinh-yen, *Eberhardt 3752* (P), *3788* (P), *4903* (P); Nam Dinh, *Mouret 99* (P); Haphong, *Balansa 1178* (K, P); Quang Yen, *Balansa 1179* (P); between Hongay and Quang Yen, *Service Forestier du Tonkin* (P); Pho Ba Che, *Service Forestier d'Indo-Chine*, 1924 (P); Phong Du, *Fleury 37905* (P); between Bui Bong and Tien Yen, *Service Forestier du Tonkin* (P); Tien Yen, *Tsang 27469* (A); Ha-coi (Hacai), *Tsang 27161* (A, P), *29180* (A, K, P), *29577* (K); Dam Ha, *Tsang 29911* (A), *30295* (A, P); Mon Cay (Mong Cai), *Tsang 26946* (A); without definite locality, *d'Alleizette 130* (P), *Bon 19* (P), *519* (P), *719* (P), *789* (P), *1508 bis* (P). **South Viet Nam.** Quang Tri, *de Pirey 41237* (P), *Poilane 1057* (P); Hue, *Bauche 77* (P); Can Hai, *Pételot leg. Colani 3545* (P), *4545* (NY, P); Huong Thuy, *Eberhardt 2421* (P); Mt. Bani, *Clemens 3476* (A, BM, K, MICH, NY, P, U, US, W); Ba Na, *Poilane 7332* (P); Tourane (Da Nang) and vicinity, *Clemens 4450* (A, MICH, NY, P, U, US); Da Bac, *Godefroy 854* (P); Kontum Province, *Poilane 32276* (P); Nhatrang, *Poilane 3085* (P), *3371* (P), *5499* (P); Lang Bian Mts., Djiring (Djirinh), *Chevalier 31259* (P); Cam Ranh Peninsula, *Kiêt 202* (P); Blao, *Poilane 20981* (P), *21794* (P), *21968* (P), *23399* (P); Braian Mt., *Poilane 23843* (P); Ba Rau, *Poilane 10117* (P); Tayninh, *Muller 1610* (P); Ca Na, *Evrard 2490* (P), *Poilane 9261* (P), *9601* (P), *12408* (P); Trang Bom, *Dien 93* (P); Bien Hoa and vicinity, *Lefèvre 104* (P), *Dien 139* (P); Saigon vicinity, *Lefèvre 241* (P); Baria Province, *Poilane 637* (P), *651* (P); Phu Quoc (Fukwok) Island, *Contest-Lacour 311* (P); Mekong Delta, *Harmand 517* (P); Con Son Islands (Poulo Condor), *Germain 27* (P), *Harmand*, 1875–1877 (P); without definite locality, *Godefroy 782* (P), *795* (P), *Dien 1635* (P), *Harmand 795* (P), *Talmy*, 1868 (P), *Thorel 1188* (BM, NY, P), *Poilane 12231* (P). **China.** YUNNAN PROVINCE: Szemoa (Ssu-mao) *Henry 12263* (A, K, NY, US, W), *12263A* (A, W), *12263B* (A, NY), *12263C* (A), *12263D* (A, K, NY, US), *12263E* (A, NY); Luh-shun (Kuan-fang) Hsien, *Wang 81135* (A); Chei-li Hsien (Ching-huang), *Wang 75711* (A), *75866* (A), *75935* (A), *77427* (A), *77650* (A), *78110* (A), *78616* (A), *78653* (A), *79114* (A), *79133* (A), *79494* (A), *79662* (A); Fo-hai (Meng-hai), *Wang 74212* (A), *74387* (A), *74438* (A), *77201* (A); Meng-la, *Wang 80660* (A). KWANGSI PROVINCE: South Nanning, Seh-feng, Dar Shan, *Ching 7806* (NY, W), *7951* (A, NY, US), *7993* (A, NY, US), *8209* (A, NY, US); Shap Man Taai Shan, SE of Shang-sze (Shang-ssu), *Tsang 22468* (A), *23815* (A, NY), *24099* (A, NY), *24522* (A, NY). KWANGTUNG PROVINCE: Fang-ch'eng District, Kung P'ing Shan, *Tsang 26754* (A); Lei-chou Pan-tao (Luichow Peninsula), near Pon-tan, *Tsiang 2562* (NY); Kochow (Kao-chou), *Tsiang 938* (W), *939* (A); Ting-hu Shan, *Liou 855* (NY); Kao-yao District, Teng Wo Shan, *Lau 20130* (NY, US, W), *Levine 3115* (A), *Levine & Groff CCC 35* (A, US), *Tsiang 758* (A, MEL), *811* (A, W); Lo-fou Shan, *Merrill 10881* (NY), *Tsiang 1625* (A), *1634* (A), *1641* (A); Canton (Kuang-chou) and vicinity, *Fung A382* (NY), *A461* (NY), *Henry Herb. Hance 430* (BM), *Levine CCC 350* (A, GH, US), *CCC 773* (A, BM, US), *CCC 1150* (GH, US), *CCC 1225* (A, GH, US), *CCC 1620* (A, GH, US), *CCC 1700* (A, BM, GH, US), *Levine leg. Ah To CCC 1712* (A), *Levine CCC 2171* (A), *CCC 3048* (A), *Levine leg. Ah To CCC 3156* (A, GH, US), *Sampson*, June 17, 1884 (K), January 11, 1885 (K); Nanhoi (Fo-shan) District, *Chun 7809* (A); Lantao Island, *Taam 1644* (NY, US), *Tsang LU 16540* (A, W), *Tsiang 627* (A, NY, US); Wa Shan Tau, *Levine & McClure CCC 6978* (BM); Hweichang District, Lin Fa Shan, *Tsang 25660* (A); without definite locality, *Wang 521* (A, MEL). HAINAN ISLAND: Lamko (Lin-kao) District, *Tsang 380* (A, K, NY, US); Ch'eng-mai District, *Lei 50* (NY, US, W); Nodoa (Tan-hsien),

Chun Nanking Univ. 5867 (US), *Gressitt 882* (A, BM), *Lau 1008* (A, BM, NY), *McClure CCC 7958* (BM, P), *Tsang 106* (A, NY, US), *359* (A, US); Dung Ka to Wen Fa Shi, *Chun & Tso 43678* (A, NY, W), *43757* (A, NY, US); Tai Pin, *Gressitt 1091* (A, BM); Wen-ch'ang District, *Fung 20337* (BM, K, NY, US, W); Kachek (Ch'iung-hai), Wong Chuk (Huang-chu), *McClure CCC 9780* (US, W); Kan-en (Kan-ch'eng) District, Chim Fung Mt., *Lau 5282* (A); Five Finger Mt. (Wu-chih Shan), *McClure CCC 8483* (BISH); Yaichow (Yai-ch'eng), *How 70960* (A, BISH, NY), *How & Chun 70074* (A, NY), *70156* (A, NY, US), *Liang 62021* (NY), *62233* (NY, US); without definite locality, *Chun & Tso 44182* (BISH, NY, W), *Ford* (US), *Henry 13* (K), *8091* (K, NY), *8119x* (GH), *8220x* (K), *8552* (K), *Lau 426* (A, BM, K, MICH, NY, US, W), *Liang 63301* (NY, US), *63594* (NY), *63685* (NY), *63727* (NY), *64631* (NY), *65057* (NY, US), *McClure CCC 7732* (A, K), *CCC 9711* (US, W), *Tsang & Fung 635* (A, K, NY), *Wang 33193* (NY), *33624* (A, NY), *33944* (NY), *35794* (NY), *36019* (NY), *36504* (NY), *36557* (NY, US). HONG KONG ISLAND: *Chun 5012* (A, US), *6054* (A, W), *6087* (A), *6553* (MEL), *6561* (A, MICH), *Gibbs Herb. Hong Kong 7411* (NSW), *Jelinek Exped. "Novara,"* 1857–1859 (W), *Lamont 119* (BM), December, 1873 (BM), March, 1874 (BM), *Liou 800* (NY), *Murray* (MEL), *Sargent*, November 5, 1903 (A), *Taam 1479* (NY, US), *Tang 354* (A), *Tenison-Woods* (MEL), *Vachell 119* (K), *Wilford 367* (K), *Wright U.S. North Pacific Exploring Exped.*, 1853–1856 (GH, L, NY, US). Without definite locality: *Seemann 2475* (BM, K). **Taiwan.** Kelung (Kiirun), *Faurie 36* (A, W), *Ford*, June, 1884 (GH, K); without definite locality, *Nakahara 702* (US). **Sumatra and neighboring islands.** RES. ATJEH: Gajo Lands, between the confluence of the Kapi and Aoenan Rivers and Paja, *van Steenis 9920* (L). RES. TAPANOELI: NW side of Toba Lake, *W. & C. Bangham 1168* (A, NY); between Anggoli and Sipirok, *NIFS bb 5232* (L). WEST COAST: Mt. Sago, *Ichlas 2* (L), *Maradjo 63* (L), *Meijer 1504* (L), *7373* (K, L); without definite locality, *Meijer 7318* (L). EAST COAST: Asahan District, Banderpoelo, *Yates 2170* (MICH, L, NY, W); Kota Pinang District, *Rahmat si Toroes 3385* (A, L, NY, US), *3496* (A, L, NY, US), *3526* (A, NY, US), *3600* (A, L ,NY, US), *3744* (A, NY, US), *3812* (A, NY, US), *3832* (L, NY, US), *3984* (A, L, NY, US); Pakanbaru, *Soepadmo 187* (A, AD, K, L, UC). RES. BENKOELEN: Mt. Kemala, *NIFS bb 8764* (L). RES. PALEMBANG: *Anonymous* (L). LAMPONG DISTRICTS: Mt. Tanggamus, *Jacobs 8156* (L, BISH), *8216* (L); Kebang, *Teysmann HB 4514* (L, U, isotypes of *Acronychia apiculata* Miq.). LINGGA ISLAND: *Anonymous 14621* (L). **Malay Peninsula and neighboring islands.** LANGKAWI ISLAND: near Kuah, *Turnau 742* (L); without definite locality, *Curtis* (BM, US, W). KEDAH: Tampei Forest Reserve, *Whitmore FRI 437* (A, K, L); Besut District, Mt. Kluang, *Sinclair & Salleh SF 40801* (L). PENANG ISLAND: Penang Hill, *Corner SF 31599* (A), *Nauen SF 37658* (A); Telok Bahang, *Sinclair SF 39302* (L); Muka Head, *Hardial 665* (LAE); Highland Hill, *Haniff & Nur SF 3023* (K); Highlands Forest Reserve, *Sweklie 1454* (K); without definite locality, *Curtis 315* (BM), *694* (BM, US, W), *Porter 1205* (K). PERAK: Larut, *King's Collector 4928* (MEL), *Ridley 3090* (BM, K, L); Gunong Bubu, *Chew 1202* (A, K, L, UC); Dindings, Telok Kopia Forest Reserve, *Whitmore FRI 3108* (L); Dindings, *Ridley 7940* (BM); Pangkor, *Corner SF 31657* (K). PAHANG: Kuantan, *Bidin*, September 20, 1921 (A), *Dolman 6622* (K), *Wood Kepong Field No. 76118* (K, L); Tioman Island, *Henderson 18447* (A); Mt. Peta, *Whitmore FRI 3859* (L). SELANGOR: Klang, Jupra Forest Reserve, *Hamid & Yeob CF 3273* (K). JOHORE: Mt. Panti, *Everett FRI 13815* (L); Mt. Kendok, *Ogata KEP 105017* (L). Without definite locality: *Maingay 281* (BM, GH, K, L). **Java.** WESTERN JAVA: Mt. Pajung, Udjung Kulon

Reserve, *Kostermans UNESCO 148* (CANB, NSW, P), *Wirawan 102* (A, BISH, L), *211* (L, LAE); Tjiteras, *Backer 26499* (L); Mt. Njoentjoeng, *Saimoendt 24* (L, UC); Djasinga, *Backer 23437* (L), *Bakhuizen v. d. Brink 1134* (L), *Esche & Wasyat NIFS Ja 6165* (L); Tjidadap, *Winckel 1815β* (L, U), *1851β* (K, L, U); Djakarta vicinity, *Backer*, February, 1905 (L), *Kollmann*, 1838 (BM, NY); Depok and vicinity, *Bakhuizen v. d. Brink f. 2047* (L, U, W), *Beumée*, March, 1927 (UC, W), *Kern 7518* (L), *van Ooststroom 12615* (CANB); Sawangan, *Bakhuizen v. d. Brink f. 1871* (L); Bogor, *NIFS Ja 2377* (A); Tjisiing, *Bakhuizen v. d. Brink 7937* (L); Mt. Salak, *Blume* (BM, GH, L, NY, U, isotypes of *Acronychia arborea* Bl.), *Zollinger 1699* (A, BM, MEL, P); Mt. Gadjah, Salak, *Bakhuizen v. d. Brink 4152* (L, UC), *Bakhuizen v. d. Brink f. 598* (U); "Houtsoorten van den Gedeh" (probably Mt. Gede), *Anonymous (probably Junghuhn) 643* (A, L, US); Mt. Gede, *Ridley*, February 13, 1915 (K); Radjamandala, *Docters van Leeuwen 7690* (L, U); Bandoeng, *NIFS Ja 3984* (L), *NIFS Ja 4011* (L); Mt. Tangkoebanprahoe, *Junghuhn 357* (A, CANB, K, L); Mt. Malabar, *Monterie 4* (L), *50* (A, L, U); Mt. Wajang, *Smith & Rant 593* (L, U); Telaga Patengan, *Backer 12516* (L); Mt. Semboeng, *Backer 12438* (L); Tjiawi, *NIFS Ja 1936* (L); Pangrango-Gedeh Reserve, Tjibeureum, *Kostermans UNESCO 278* (A, BM, L, LAE, NSW, NY, P); Mt. Sawal above Tjikoneng, *Backer 8449* (L); Mt. Tjareme, *van Steenis 12797* (L); Pangandaran Peninsula, *Kostermans 23070* (L); without definite locality, *Ploem* (L). CENTRAL JAVA: N slope of Mt. Slamet, *Kostermans*, August, 1968 (L); Mt. Oengarang, near Medini, *Junghuhn* (L). Without definite locality: *Blume* (BM, GH, L, NY, U, isotypes of *Acronychia laurifolia* Bl.), *Junghuhn 351* (L), *352* (A, L, US), *353* (L), *355* (L), *Koorders 7058β* (L), *7060β* (K), *7067β* (L), *13918β* (P), *15356β* (L), *Lobb* (K), *Reinwardt* (L), *Teysmann*, 1867 (L), 1868 (K, NY), *Zollinger 402* (A, L, P), *402A* (BM, L), *643* (K). **Borneo and neighboring islands.** SARAWAK. Lundu District: Mt. Pueh, *Smythies 15651* (K, L). British North Borneo (Sabah). Kudat District: Banggi Island, *Ampuria SAN 40780* (L); Kedayan, *Balajadia North Borneo Forestry Dept. 4068* (K, L); Nangka, *Apostol North Borneo Forestry Dept. 7679* (A, K, L). Ranau District: Mt. Ampuan, *Meijer SAN 20715* (L), *Singh SAN 24185* (L), *SAN 28328* (L); Mt. Kulong, *Singh SAN 28315* (K, L). Tawau District: Quoin Hill Road, *Gibot SAN 32547* (K, L), *SAN 32992* (L), *SAN 47409* (L), *SAN 47439* (L); Mt. Pyramid Forestry Reserve, *Saikeh SAN 68115* (L); Tawau, *Elmer 21044* (A, BISH, BM, GH, L, NY, U), *21056* (BISH, BM, GH, L, NY, U); Apas Road, *Gibot SAN 29617* (L), *Sinanggul SAN 40518* (L), *SAN 56223* (K, L), *Wood SAN 17199* (L). Lahad Datu District: Segama River, *Chai SAN 31667* (L); Mt. Silam, *Sinanggul SAN 57283* (L); Silam and vicinity, *Pereira SAN 43436* (L), *Talip SAN 47695* (K, L), *SAN 52924* (L), *SAN 54976* (K). Without definite locality: *Keith North Borneo Forestry Dept. 9456* (L), *Wood 2474* (A, W). KALIMANTAN. Samarinda District: Kelindjau River near Bentuk, *Kostermans 9684* (A, L). Kapoeas-Barito District: Bangkal, *Sauveur 1160* (L). ANAMBAS ISLANDS. Djemadja Island, *Henderson SF 20458* (K). **Philippines.** PALAWAN ISLAND. Quezon, Mono, *Reynoso PNH 87756* (CANB); without definite locality, *Cenabre FB 29991* (L). CALAMIAN GROUP. Busuanga Island: Concepcion, *Lopez BS 41365* (A, MEL). MINDORO ISLAND. Mt. Yagaw, *Conklin PNH 18637* (A, L). LUZON ISLAND. Ilocos Norte Province: Burgos, *Ramos BS 27357* (A, GH, US); without definite locality, *Paraiso FB 23857* (GH). Cagayan Province: Gonzaga, *Edaño BS 78279* (MICH); Camalaniugan, *Lizardo FB 29527* (A); Sitio Babayuan SW of Camalaniugan, *Bartlett 14941* (BISH, MICH, NY); between Lal-lo and Magapit, *Lagrimas & Lomibao PNH 40639* (BM, L); Pinagteponan River, *Edaño BS 78347*

(MICH); Mt. Bawa, *Edaño BS 78489* (MICH); Calamanugan, *Bacani FB 16990* (BM, NSW); Penablanca, *Ramos BS 76745* (MICH, NY); without definite locality, *Bernardo FB 13126* (P), *FB 27080* (A, BM), *Ramos BS 7394* (L). Benguet Subprovince: *Merrill 9693* (US). Pangasinan Province: Mt. San Isidro, *Fenix BS 29976* (A, L). Nueva Ecija Province: Mt. Umingan, *Ramos & Edaño BS 26379* (A, US). Bulacan Province: *Leuterio FB 24727* (GH). Rizal Province: *Loher 15053* (P), *Ramos BS 1060* (U, US), *Reillo BS 19255* (*Merrill Species Blancoanae 55*) (A, BM, K, L, NSW, NY, P, US, W). Bataan Province: Mt. Mariveles, *Borden FB 1333* (BM, NSW), *Elmer 6724* (NY), *Foxworthy BS 1581* (NY, US), *Loher 5025* (K), *Merrill 298* (A, MICH, NY, UC, US), *3185* (K, NY), *3870* (K, NY, P, US), *Williams 606* (GH, NY, US). Quezon Province: Tagcawayan, *Foxworthy & Ramos BS 13089* (BM, US), *Mendoza PNH 97817* (BM, K); without definite locality, *Cailipan FB 26024* (L). Without definite locality: *Vidal 1194* (A, L). SAMAR ISLAND. *Oro FB 20826* (US). LEYTE ISLAND. Palo, *Elmer 7086* (A, NY). SULU ARCHIPELAGO. Tawitawi Island: *Yates BS 36320* (L). MINDANAO ISLAND. Zamboanga Province: Port Santa Maria, *Simbajon FB 31428* (NY). **Celebes and neighboring islands.** KABAENA ISLAND: *Elbert 3465* (CANB, P, US). **Papua.** WESTERN DISTRICT: Bensbach Subdistrict, Weam, *Ridsdale NGF 33503* (CANB); upper Wassi Kussa River, *Brass 8643* (A, K, L, LAE); Mai Kussa River, Sebidiro, *Henty & Katik NGF 38761* (CANB); Daru Island, *Brass 6309* (A, holotype of *Acronychia elliptica* Merr. & Perry; BRI, L, LAE, isotypes). **Cultivated.** MAURITIUS: *Telfair* (NY). INDIA: Botanic Gardens, Calcutta, *Voigt 270* (US). JAVA: Botanic Gardens, Bogor, *Anonymous* (K, U).

The nomenclature of this species has a long history of confusion, stemming, according to Dryander (1794: 232) and Trimen, in his study of Hermann's Ceylon herbarium and Linnaeus's *Flora Zeylanica* (1888: 140), from the fact that Linnaeus, in his *Flora Zeylanica*, mixed up the native names of species 139, *Jambolifera*, and species 185, *Myrtus* [*M. cumini* L. Sp. Pl. 1: 471. 1853 = *Syzygium cumini* (L.) Skeels], giving *Jambolones*, *Jambolons*, and *Madan* for the former and *Ankenda* for the latter when it should have been the reverse. Trimen referred the specimen in the Hermann herbarium representing species 139 to *Acronychia laurifolia* Bl. Alston [in Trimen, Handb. Fl. Ceylon 6 (suppl.): 37. 1931] correctly assigned the plant to *A. pedunculata* (L.) Miq. and listed *A. laurifolia* as a taxonomic synonym.

A note (apparently written by Dryander) on one of the British Museum sheets cited above, *Koenig*, from Ceylon, further confirms Trimen's identification of the Hermann specimen of *Jambolifera*. It reads (in part): "Mr. Schumacher says that Prof. Rottboell has compared this plant (of which Koenig has sent him specimens) with *Jambolifera pedunculata* in Hermann's herbarium, now in possession of Count Moltke, and found it to be the same."

Apparently because of the confusion surrounding the identity of *Jambolifera pedunculata*, a number of authors besides Trimen, for example, Engler (1896: 180; 1931: 310) and Hooker f. (Fl. Brit. Ind. 1: 498. 1875), have chosen to use the name *Acronychia laurifolia* for this plant. Other authors, including Merrill (Enum. Philip. Fl. Pl. 2: 333. 1923, Alston (*loc. cit.*)) and Li (Woody Fl. Taiwan 364. 1963), have used the

name *A. pedunculata* even though doing so was an acknowledgment that *Jambolifera*, rather than *Acronychia*, is the correct name for the genus.

As is mentioned above in the discussion of generic nomenclature, a proposal has been submitted for the conservation of *Acronychia* against *Jambolifera*.

Several of the taxonomic synonyms given above were previously reduced to that status: *Gela lanceolata* and *Jambolifera rezinosa* were placed in synonymy under *Acronychia pedunculata* by Merrill (1935: 200); *A. laurifolia* has been treated as a synonym of *A. pedunculata* by a number of authors including Alston (*loc. cit.*), Merrill (1935: 200), and Li (*loc. cit.*); *A. arborea* was placed in the synonymy of *A. laurifolia* by Ridley (Fl. Malay Pen. 1: 347. 1922); *Melicope conferta* was recognized as a synonym of *A. pedunculata* by Merrill (Sp. Blancoanae 199. 1918); and *Clausena simplicifolia* was placed in the synonymy of *A. laurifolia* by Hooker f. (*loc. cit.*).

The type of *Acronychia apiculata* falls well within the range of variation of *A. pedunculata* as delimited here. Miquel inadvertently credited Junghuhn with the type collection, actually made by Teysmann in the Lampong Districts of southern Sumatra.

Acronychia barberi was based on what appear to be abnormal specimens. Both of the syntypes have a fair proportion of leaves that are unusually small and thin-textured for *A. pedunculata*. These reduced leaves tend to predominate on some branchlets and not on others, indicating, perhaps, that somatic mutations may be responsible for their presence.

In the original description of *Acronychia elliptica*, Merrill and Perry noted its similarity to *A. pedunculata* but pointed out that the former differed in having glabrous petals and disc and a shorter inflorescence. These features have now proven to be variable in *A. pedunculata* and it is not possible to maintain the Papuan plant as a separate species.

The closest relative of *Acronychia pedunculata* appears to be *A. trifoliolata* var. *trifoliolata*, some specimens of the two seeming to be identical except for the difference in leaf complexity.

As is indicated in the description, *Acronychia pedunculata* is extremely variable. I have not found it possible to recognize more than a single taxon, however, since the variants either occur in mosaic patterns of geographic distribution or are rendered unkeyable by intergradation. The disc, for instance, is consistently pubescent in specimens from northeast India, Ceylon, and Java; consistently glabrous in specimens from the Philippines, Celebes, and Papua; and either pubescent or glabrous in specimens from southern India, Indochina, China, Sumatra, Malaya, and Borneo. The fruits, further illustrating the problem, are generally of the large size range (10–15 mm. wide) in Sumatra, yet grade into the small size range on that island. Similar gradations in fruit size also occur in India, Ceylon, Indochina, Malaya, and Borneo.

UNMATCHED OR OTHERWISE EXCLUDED NAMES

Acronychia albiflora Rechinger, Denkschr. Akad. Wiss. Wien **85:** 294. 1910 = **Melicope.**[11]

?Acronychia anomala Lauterb. Bot. Jahrb. **55:** 253. 1918; Nova Guinea (Bot.) **14:** 145. 1924 = **Evodia anomala** (Lauterb.) Linden, Nova Guinea (New Ser.) **10:** 148. 1959.

Acronychia baueri Schott, Rutaceae. Frag. Bot. 5, *t. 3.* 1834 [*Jambolifera baueri* (Schott) O. Ktze. Rev. Gen. Pl. **1:** 102. 1891] = **Bauerella.**[12]

Acronychia baueri Schott forma *majoriflora* Domin, Bibliot. Bot. **22**(89): 294. 1927 = **Bauerella.**

Acronychia boweriana Christophersen, Bishop Mus. Bull. **128:** 106, *fig. 13.* 1935 = **Melicope.**

Acronychia cauliflora Lauterb. Bot. Jahrb. **55:** 253, *fig. 5.* 1918 = **Evodiella cauliflora** (Lauterb.) Linden, Nova Guinea (New Ser.) **10:** 147. 1959.

Acronychia cunninghamii Hook. Bot. Mag. *t. 3994.* 1843 = **Medicosma cunninghamii** (Hook.) Hook. f. in Benth. & Hook. Gen. Pl. **1:** 297. 1862.

Acronychia cuspidata Lauterb. Bot. Jahrb. **55:** 254. 1917. The holotype of this species was apparently destroyed at Berlin and I have not seen any isotypes. Described from the Sepik River of New Guinea on a flowering collection, it seems rather close to *Acronychia brassii* Hartley but differs, judging from Lauterbach's description, in having cuspidate leaflets, each with tip 1.5 cm. long; inflorescences 2.5 cm. long; the acutely lanceolate sepals 1.7 mm. long; and in having glabrous staminal filaments. The ovary is described merely as "glabrum truncatum," so there is no certainty that this is an *Acronychia.*

Acronychia diversifolia A. Gray, Bot. U.S. Expl. Exped. **1:** 334. 1854, *sphalm.* = **Melicope.**

Acronychia endlicheri Schott, Rutaceae. Frag. Bot. 3, *t. 2.* 1834 [*Jambolifera endlicheri* (Schott) O. Ktze. Rev. Gen. Pl. **1:** 102. 1891], *nomen illegit.*, cf. Green, Jour. Arnold Arb. **51:** 209. 1970 = **Bauerella.**

Acronychia eriocarpa Panch. ex Guillaumin, Not. Syst. Paris **2:** 98. 1911, *nomen illegit.*, cf. Green, Jour. Arnold Arb. **51:** 211. 1970 = **Bauerella.**

Acronychia esquirolii Léveillé, Fl. Kouy-Tchéou 374. 1915. I have not seen any authentic material of this species. It is doubtful that it belongs in *Acronychia,* however, since the leaves are described as verticillate and the flower color as rose-violet.

[11] As is indicated in the key given in the introduction, *Melicope* and *Euodia* differ only in stamen number. This is a highly impractical distinguishing characteristic since it is often impossible to determine in fruiting specimens, especially as is often the case in both genera, in species with functionally unisexual flowers. Also, there is evidence that the two genera, thus delimited, are unnatural. At the present, therefore, I am not sure that both genera should be maintained, and new combinations are not made for the species that were originally described in *Acronychia.*

[12] The genus *Bauerella* will be the subject of a future study and the necessary new combinations will be made at that time.

Acronychia heterophylla A. Gray, Bot. U.S. Expl. Exped. **1:** 333. 1854 & *t. 32.* 1857 [*Jambolifera heterophylla* (A. Gray) O. Ktze. Rev. Gen. Pl. **1:** 102, 1891] = **Melicope.**

Acronychia hillii F. Muell. Frag. Phytogr. Austral. **1:** 26. 1858 = **Bauerella.**

Acronychia leiocarpa P. S. Green, Jour. Arnold Arb. **51:** 213, *fig. 1(d).* 1970 = **Bauerella.**

Acronychia ligustroides Panch. ex Guillaumin, Not. Syst. Paris **2:** 98. 1911, *nomen illegit.*, cf. Green, Jour. Arnold Arb. **51:** 213. 1970 = **Bauerella.**

Acronychia lobocarpa F. Muell. Jour. Bot. **30:** 17. 1892 = **Melicope.**

Acronychia niueana St. John, Bishop Mus. Bull. **178:** 67, *fig. 3.* 1943 = **Melicope.**

Acronychia obovata Merr. Philip. Jour. Sci. Bot. **12:** 274. 1917.[13]

Acronychia oligophlebia Merr. Philip. Jour. Sci. Bot. **23:** 246. 1923.[13]

Acronychia ovalifolia Panch. ex Guillaumin. Not. Syst. Paris **2:** 98. 1911, *nomen illegit.*, cf. Green, Jour. Arnold Arb. **51:** 213. 1970 = **Bauerella.**

Acronychia ovata Endl. ex Heynh. Nomencl. Bot. Hort. **2:** 8. 1846, *nomen illegit.*, cf. Green, Jour. Arnold Arb. **51:** 210. 1970 = **Bauerella.**

Acronychia petiolaris A. Gray, Bot. U. S. Expl. Exped. **1:** 335. 1854 & *t. 33(A).* 1857 [*Jambolifera petiolaris* (A. Gray) O. Ktze. Rev. Gen. Pl. **1:** 102. 1891; *Acronychia simplicifolia* (Endl.) McGillivray & Green subsp. *petiolaris* (A. Gray) P. S. Green, Jour. Arnold Arb. **51:** 212, *fig. 1(c).* 1970] = **Bauerella.**

Acronychia porteri Hook. f. Fl. Brit. Ind. **1:** 498. 1875 [*Jambolifera porteri* (Hook. f.) O. Ktze. Rev. Gen. Pl. **1:** 102. 1891].[13]

Acronychia retusa A. Gray, Bot. U. S. Expl. Exped. **1:** 338. 1854 & *t. 34(A).* 1857 [*Jambolifera retusa* (A. Gray) O. Ktze. Rev. Gen. Pl. **1:** 102. 1891] = **Melicope.**

Acronychia rhytidocarpa Merr. & Perry, Jour. Arnold Arb. **22:** 55. 1941 = **Euodia.**

Acronychia richii A. Gray, Bot. U. S. Expl. Exped. **1:** 336. 1854 & *t. 33(B).* 1857 [*Jambolifera richii* (A. Gray) O. Ktze. Rev. Gen. Pl. **1:** 102. 1891] = **Melicope.**

Acronychia rubescens Lauterb. Bot. Jahrb. **55:** 252. 1917. I have not seen any authentic material of this species, described from the Sepik District of New Guinea, and have not been able to match its description, based on a single collection in flower bud only, with any of the known species of *Acronychia.*

Acronychia serrata Hochr. Pl. Bogor. Exsicc. 49. 1904 = **Schizomeria serrata** (Hochr.) Hochr. Ann. Conserv. Jard. Bot. Genève **10:** 118. 1907.

Acronychia simplicifolia (Endl.) McGillivray & Green subsp. *neoscotica* P. S. Green, Jour. Arnold Arb. **51:** 211, *fig. 1(b).* 1970 = **Bauerella.**

[13] As is noted in the introduction, *Acronychia obovata, A. oligophlebia,* and *A. porteri* are considered to be distinct from *Acronychia,* but further study is needed to determine their correct generic placement.

Acronychia tetrandra F. Muell. Frag. Phytogr. Austral. **9:** 104. 1875, *nomen illegit.*, based on *Euodia haplophylla* F. Muell. = **Euodia.**

Euodia haplophylla F. Muell. Frag. Phytogr. Austral. **5:** 179. 1866 [*Acronychia haplophylla* (F. Muell.) Engl. Nat. Pflanzenfam. III. **4:** 180. 1896] = **Euodia.**

Evodia minahassae Teysm. & Binnend. Natuur. Tijdschr. Nederl. Ind. **29:** 255. 1867 [*Acronychia minahassae* (Teysm. & Binnend.) Miq. Ann. Mus. Lugd.-Bat. **3:** 245. 1867] = **Melicope.**

Evodia muelleri Engl. Nat. Pflanzenfam. III. **4:** 121, *fig. 67(G–D)*. 1896 [*Acronychia muelleri* (Engl.) W. D. Francis, Kew Bull. **1931:** 190. 1931] = **Evodiella muelleri** (Engl.) Linden, Nova Guinea (New Ser.) **10:** 147. 1959.

Jambolifera chinensis Spreng. Syst. Veg. **2:** 216. 1825 [*Cyminosma chinensis* (Spreng.) G. Don, Gen. Syst. **1:** 781. 1831], *nomen illegit.*, based on *Jambolifera pedunculata* sensu Lour. Fl. Cochinch. 231. 1790 = **Syzygium.**

Jambolifera coromandelica Houtt. Natuur. Hist. Ser. 2. **2:** 273, *pl. VII, fig. 2.* 1774. I do not recognize the genus but this is not an *Acronychia.*

Jambolifera odorata Lour. Fl. Cochinch. 231. 1790 [*Cyminosma odorata* (Lour.) DC. Prodr. **1:** 722. 1824; *Acronychia odorata* (Lour.) H. Baill. ex Crevost & Lemarié, Cat. Prod. Indochina **1:** 172. 1917]. I have not seen authentic material of this species. Merrill, A commentary on Loureiro's "Flora Cochinchinensis," 220, 1935, refers it to *Acronychia* sp., but this determination seems unlikely since the inflorescence is described as racemose and the fruit as one-seeded.

Vepris simplicifolia Endl. Prodr. Fl. Norfolk 89. 1833 [*Acronychia simplicifolia* (Endl.) McGillivray & Green, Jour. Arnold Arb. **51:** 209. 1970] = **Bauerella.**

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Wirawan *102*, *211* (42).
Womersley *NGF 4364* (20); *NGF 4466* (39); *NGF 4490*, *NGF 4873*, *NGF 6026* (20); *NGF 6049* (25); *NGF 9427* (20); *NGF 11247* (29); *NGF 11383* (20); *NGF 11720* (25); *NGF 14125* (20); *NGF 14127* (25); *NGF 15230* (12); *NGF 17911*, *NGF 19190* (37c); *NGF 19325* (37b); *NGF 24501* (18); *NGF 24642* (20); *NGF 24903* (37c); *NGF 37188* (20).
Womersley & Floyd *NGF 6942* (39).
Womersley & Millar *NGF 8337* (37c); *NGF 8556* (37b).
Womersley, van Royen & Versteegh *NGF 5998* (20).
Womersley & Sleumer *NGF 13906*, *NGF 13918* (12); *NGF 13938* (18).
Womersley & Woolliams *NGF 12384* (39); *NGF 37080*, *NGF 37090* (26).
Wood, D. D., *2474* (42).
Wood, G. H. S., *SAN 17199*, *Kepong Field No. 76118* (42).
Worthington *49*, *141*, *1579*, *1754*, *2864* (42).

Yates *2170*, *BS 36320* (42).

Zollinger *402*, *402A*, *643*, *1699* (42); *2530* (37a).

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